

(2) Does the project promote and encourage collaboration among parties? Is there widespread support for the project? What is the significance of the collaboration/support? Will the project help to prevent a water related crisis or conflict?

KDWCD, as well as TID and COV, have a well developed process for informing stakeholders and the general public about the proposed Project. Previous and future stakeholder involvement efforts are described below:

Visalia Water Management Committee. In 2001, as a result of an agreement between KDWCD and City of Visalia (COV), the Visalia Water Management Committee (Committee) was formed. COV and KDWCD are voting members, and TID attends and participates in quarterly Committee meetings. COV held a Proposition 218 election to raise assessments of landowners within the COV boundary. Through this election, \$100,000/year (adjusted to CPI) is acquired by COV, and utilized by the Committee, to maintain and enhance groundwater levels in and around the COV. The Committee acquires surface water for groundwater recharge, and identifies and implements projects to increase groundwater recharge potential.

Board Meetings. The District holds monthly board meetings that are open to the public. The agenda for the Board meetings are posted at the District office 72 hours in advance of each meeting. At each meeting, there is a public comment period where the public is invited to voice their opinion or concern on any issue. During the course of the proposed Project, regular presentations on the Project will be made at the Board meetings.

Board Resolution. The KDWCD Board of Directors has approved the proposed Project. The Board of Directors is comprised of local landowners, so this endorsement represents community support.

Website. The District maintains a website (www.KDWCD.com) to keep stakeholders and the public informed of water, environmental, and agricultural issues. The proposed Project could be placed on the website to track its development.

Water Resources Investigation. KDWCD conducts a regular study of regional water resources and how changing supplies and demands affect the reliability of water supplies available to the District and the region.

Integrated Regional Water Management Plan. Since 2007, KDWCD has assisted in preparing the Kaweah River Basin IRWM as a member of the IRWM group. The IRWMP being prepared is comprised of several public water management agencies, including KDWCD, cities and other special interest groups in the region. The District has submitted the Oakes Basin portion of the Project for consideration in the planning effort for Round 1 Funding, and will submit the Packwood Creek improvements for consideration in Round 2 funding.

Letters of Support. Letters of support for the Project are included as **Appendix F**, and have been provided from:

- City of Visalia
- Persian Ditch Company
- Friant Water Authority
- Tulare Irrigation District
- Evans Ditch Company

Prevention of Water Related Crisis or Conflict. The proposed Project will increase the efficient use of limited water supply, and help to reduce competition for the water resources in an area that experiences frequent water shortages and water conflicts. Refer to **Section E.1** above for information on conflicts and crisis related to the San Joaquin River Settlement, inadequate surface storage, groundwater level declines, and Delta pumping restrictions. The proposed Project will help to address and partially alleviate all of these concerns.

(3) Will the proposed WaterSMART grant project help to expedite future on-farm irrigation improvements, including future on-farm improvements that may be eligible for NRCS Funding?

Increasing the level of service through modernization on a District wide level will set the foundation for on-farm improvements. However, no specific on-farm improvements are to result from this project.

(4) Will the project increase awareness of water and/or energy conservation and efficiency efforts?

With the declining groundwater levels in the San Joaquin Valley, and the associated degradation in groundwater quality, municipalities are faced with rising operation costs and difficulties in meeting drinking water standards. By placing this recharge facility upstream of the City of Visalia, not only will the District benefit from the direct recharge, but the City will benefit from more stable groundwater levels (i.e. more stable pumping costs) and better quality water, as the water being recharged is mostly Sierra snowmelt. This Project is designed to serve as an example of the synergy that can be created between the District and local municipalities.

(f) **Implementation and Results**

Subcriteria No. 1: Project Planning

Does the project have a Water Conservation Plan, System Optimization Review, and/or district or geographic area drought contingency plans in place?

KDWCD has the following water management plans:

Integrated Regional Water Management Plan. Since 2007, KDWCD has assisted in preparing the Kaweah River Basin IRWM as a member of the IRWM group. The IRWMP being prepared is comprised of several public water management agencies, including KDWCD, cities and other special interest groups in the region.

Water Management Plan. The District prepared a Water Management Plan (WMP) in 2010 in full compliance with USBR 2008 requirements. The plan addresses numerous water management issues, primarily related to the District's surface water supply. A copy of the plan is included in **Appendix K**.

Groundwater Management Plan. KDWCD Groundwater Management Plan (GMP) was updated and adopted in November, 2006 (see **APPENDIX L**). The original plan was prepared in 1992 in accordance with the requirements prescribed in Assembly Bill No. 3030 (California Water Code Section 10750 et seq.). The 2006 Plan was revised to satisfy the new requirements for GMPs created by the September, 2002 California State Senate Bill No. 1938, which amended Sections 10753 and 10795 of the California Water Code.

As the District is a conjunctive use district and heavily relies on groundwater, these plans function as the District's drought contingency plans.

Provide the following information regarding project planning:

(1) Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, Systems Optimization Review, or other planning efforts done to determine the priority of this project in relation to other potential projects.

Integrated Regional Water Management Plan. The regional water management planning in this area is underway, but the plans are in progress and so the evaluation of the Projects and guidelines for the evaluations have not been decided on yet. The Kaweah River Basin IRWMP's project list contains the Oakes Basin Habitat Improvement portion of this Project, and will contain the Packwood Creek Improvement portion in the next round.

KDWCD GMP. The KDWCD GMP was updated in November, 2006 (see **APPENDIX**

L). The KDWCD GMP encourages member agencies to utilize “available facilities and resources for conjunctive use through cooperative management”. This document also states that “Efficient water use and distribution within the management area will be encouraged” among member agencies. This Project is consistent with the goals of the current KDWCD Regional Groundwater Management Plan.

Water Management Plan. The District’s 2010 WMP evaluates the entire District and reports to the Bureau how the District intends to implement best management practices over the next five years and meet its goal to better manage available water resources.

(2) Identify and describe any engineering or design work performed specifically in support of the proposed project.

Packwood Creek Hydraulic Study: In August of 2010 a memo was prepared by the District’s engineering consultant documenting the findings of a HEC-RAS study of Packwood Creek. This memo identified locations to implement check structure that would maximize storage and recharge capabilities (**Appendix J**).

Oakes Basin Planting: In 1999, plans and specifications were prepared for habitat restoration, recommending species and locations to plant, and an irrigation system to support the plants until they have become established (**Appendix G**).

Topographic Survey. A topographic survey of the existing Packwood Creek has been performed, along with detailed survey at two of the five check structure locations. These surveys included gathering information on the any existing structures, channel configuration and high water surface profiles within the Packwood Creek.

Structure Design. Using this topographic information, a conceptual design plan set has been developed for a typical check structure site (see **Appendix H**). The further development of these plans will assume that the structures will be built by a qualified contractor.

(3) Describe how the project conforms to and meets the goals of any applicable State or regional water plans, and identify any aspect of the project that implements a feature of an existing water plan(s).

Kaweah River Basin IRWMP: The Oakes Basin Habitat Improvement portion of the Project has also been included Kaweah River Basin IRWMP’s Project list, and was included in the 2011 implementation grant application to be funded by DWR.

Tulare Lake Basin Plan. This Plan was created by the Regional Water Quality Control Board, and contains administrative policies and procedures for protecting state waters. This Project fulfills goals in this plan by the reduction of groundwater overdraft and the improvement of groundwater quality.

CA Water Plan. The California Water Plan update for 2009 contains the following top objectives in its implementation plan:

Objective 1 - Promote, improve, and expand integrated regional water management to create and build on partnerships that are essential for California water resources planning, sustainable watershed and floodplain management, and increasing regional self-sufficiency.

Objective 2 – Use water more efficiently with significantly greater water conservation, recycling, and reuse to help meet future water demands and adapt to climate change.

Objective 3 – Advance and expand conjunctive management of multiple water supply sources—surface water and groundwater—to prepare for future droughts and climate change.

This Project conforms to the listed goals from the California Water Plan for 2009. Objective 1 is met through the building of the relationship with the City of Visalia and addressing groundwater overdraft through a local partnership. Objective 2 is met through the delivering recycled wastewater from the COV to TID. Objective 3 is met through overdraft mitigation from groundwater recharge of surplus water supplies.

CalFed Targeted Benefits. CalFed is a joint state-federal water program designed to address water supply, water quality and ecosystem restoration issues in the San Francisco Bay-Delta system. The Agricultural Water Management Council maintains a listing of CalFed Targeted Benefits to assist districts in achieving water supply reliability, water quality and in-stream flow timing benefits in the CalFed solution area. The CalFed Agricultural Water Use Efficiency Program links specific CalFed objectives with practical actions that can be carried out on the farm or by irrigation and water districts. Development of a groundwater recharge site helps achieve CalFed targeted benefit No. 185, which states *"Enhance the effectiveness of potential conjunctive use programs by reducing flows to groundwater....during periods of shortage; and increase flows to groundwater....during periods of excess."*

Subcriteria No. 2: Readiness to Proceed

Project design is expected to be complete by December, 2012. CEQA will be completed by September 2012, followed by NEPA (December, 2012). The District expects to address CEQA with a Mitigated Negative Declaration (MND), and NEPA with a Finding of No Significant Impact (FONSI). Permitting is likely to be accomplished by December, 2012 as well. The Project will then be advertised for qualified contractors to bid on. Construction will be broken into two phases, to balance out fund distribution from Reclamation, and not exceed the \$750,000 maximum distribution of Funding Group II. Assuming a normal water year, Phase 1 is planned to begin in April, 2013, lasting roughly 3 months, to be completed by July, 2013. Phase 2 is planned to begin in

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April, 2014, lasting roughly 3 months, to be completed by July, 2014. This schedule will provide a 4 month buffer to be complete by the end of Reclamation's Fiscal Year 2014, September, 2014. The following is a list of expected permits:

Section 404 Permit - Since Packwood Creek is a natural channel, a 404 permit will be required from the Army Corps of Engineers. The District will most likely apply for a streamlined Nationwide permit. This will be performed coincidentally with the CEQA process.

Streambed Alteration Agreement – the Project will disturb the floor of an existing channel. This usually requires a Streambed Alteration Agreement (Section 1602 permit) from the California Department of Fish and Game. This will be performed coincidentally with the CEQA process.

Well Drilling Permit - The contractor drilling the irrigation well at Oakes Basin will be required to obtain a well drilling permit from the County of Tulare prior to drilling.

Dust Control Plan - A Dust Control Plan may be needed for the channel earthwork. The plan will be submitted to the local Air Quality Control Board one month before construction. The District's engineering consultant will prepare the plan.

Storm Water Pollution Prevention Plan. A Storm Water Pollution Prevention Plan may be needed for the channel earthwork. The District's engineering consultant will prepare and submit the plan one month before construction.

Subcriteria No. 3: Performance Measures

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (i.e., water saved, marketed, or better managed).

Groundwater Recharge. Groundwater recharge will be achieved through delivery of water to the proposed site. A comparison of inflow and outflow will determine how much water infiltrated.

Groundwater Levels. Groundwater levels will be monitored to determine the impacts from Project water conservation. Groundwater levels are currently monitored through a monitoring network throughout the District. This is done in accordance with the District's Groundwater Management Plan using highly accurate water level sounders that are regularly calibrated and maintained.

Water Better Managed. Records on the amount of water that was conveyed through the facility will be regularly compiled from gauging station data. This will show the amount of water better managed as the existing Project site lacks automation.

Peak Hydroelectric Power. Records on water deliveries to the Packwood Creek Water Conservation Project that generate additional peak power through releases that run through the hydroelectric powerplant at Terminus Dam will be compiled and annually evaluated by the Board of Directors.

Marketing. The performance measures for the potential water marketing aspects of this Project will be to:

1. Measure water delivered to the new Project;
2. Compare pre-Project and post-Project volumes;
3. Compare pre-Project and post-Project depths to groundwater levels.

SCADA System. The performance measure used to quantify benefits from the automated control structures and SCADA at the existing basin will be to compare post-Project water delivery data to pre-Project water delivery records. District staff will be informally surveyed to determine the utility of the re-regulation from the automated control structures and new SCADA equipment so that the facility can be made as useful as possible. Ultimately, as the District obtains years of data, averages will be developed and compared, along with quantification of the benefits during wet and dry years. This information would confirm the amount of water that has been better managed by the Project. It is anticipated that this information will be annually summarized and provided to the Board of Directors for their consideration.

The information gathered in these performance measures will be regularly discussed and evaluated with marketing partners, will be annually summarized and recorded in the District's Annual Water Management Report submitted to Reclamation, and will annually be reviewed by the District's Board of Directors. The performance measures above will all be compared to baseline data. Baseline data is available for groundwater levels and groundwater recharge.

(g) Connection to Reclamation Project Activities

(1) How is the proposed project connected to a Reclamation project activities

The District is a Contractor on the Friant Division of the CVP. The Class 1 or 2 entitlement can be diverted to the proposed Project.

(2) Does the applicant receive Reclamation project water?

As of 2010, KDWCD has exchanged resources with IID to obtain a right to receive water from the Friant Division of the CVP. The District has a contract for 1,200 AF of Class 1 water, and 7,400 AF of Class 2 water. In addition, TID has a long-term Friant Division, CVP contract, and COV has a portion of the Tulare County Cross Valley Canal contract

(3) Is the project on Reclamation project lands or involving Reclamation facilities?

Yes.

(4) Is the project in the same basin as a Reclamation project or activity?

Yes.

(5) Will the proposed work contribute water to a basin where a Reclamation project is located?

Yes.

ENVIRONMENTAL COMPLIANCE

(1) Will the project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

Earth disturbing activities will occur in the preparation of the subgrade for the proposed structures. Also, some earth will be relocated and used to raise low points on channel banks. Typical mitigation measures, such as a water truck, will be used to minimize impacts on the surrounding area, along with other suggested practices developed in the CEQA/NEPA process.

The sites have been actively maintained by the District. The dust generated during Project construction will only be temporary and nothing more than is normal in the vicinity. Therefore, the construction of Project facilities are not anticipated to impact the environment.

(2) Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

It is not anticipated that the Project would affect any endangered or threatened species near the Project. However, since this is potential habitat for the San Joaquin Kit Fox and the Swainson's Hawk, and also contains Elderberry bushes, mitigation measures may be necessary prior and during construction to ensure no negative impacts to the species.

(3) Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "waters of the United States?" If so, please describe and estimate any impact the project may have.

No wetlands areas are known, but it is expected that an Army Corps Section 404 Permit will be required for construction in the channel. No adverse impacts are expected.

(4) When was the water delivery system constructed?

The District utilizes natural streams to convey water. It is unknown when these waterways were created.

(5) Will the project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

The Project will result in modifications to Packwood Creek. The modifications will be to add 4 new concrete control structure with automated gate controls and water level sensors, and retrofit one other existing structure. There is no definitive date for the creation of the existing structure or Packwood Creek. Regular maintenance is performed by responsible agencies on all canals, ditches and structures in the District. For more information on improvements, refer to the plans in **Appendix H**.

(6) Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.

A review of the National Register of Historic Places did not show listings for any buildings, structures, or features within the Project location (other than the Friant-Kern Canal). It is not believed that the existing site is eligible for listing on the National Register of Historic Places.

(7) Are there any known archeological sites in the proposed project area?

No archaeological sites are known to be present in the vicinity of the proposed modifications.

(8) Will the project have a disproportionately high and adverse effect on low income or minority populations?

No, this project is not believed to have an effect on low income or minority populations.

(9) Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

No, not known to exist at site.

(10) Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

No. Also, it is part of the District maintenance program to eradicate noxious weeds and invasive species along natural waterways.

REQUIRED PERMITS OR APPROVALS

Permits and approvals anticipated for the Project are discussed below. Both KDWCD and their engineering consultants, have experience in securing these permits for other projects.

NEPA - KDWCD, in cooperation with USBR, will comply with the NEPA regarding improvements in Packwood Creek and Oakes Basin. KDWCD will perform most of the work for complying with NEPA, and it is assumed that USBR will be the lead agency. It is anticipated that an Environmental Assessment will be prepared and a Finding of No Significant Impact (FONSI) will be filed.

California Environmental Quality Act (CEQA) - KDWCD has prepared and submitted CEQA Mitigated Negative Declarations for similar projects, and do not expect any problems in obtaining one for this Project.

Section 404 Permit - Since this is a natural channel, a 404 permit will be required from the Army Corps of Engineers. The District will most likely apply for a streamlined Nationwide permit. This will be performed coincidentally with the CEQA process.

Streambed Alteration Agreement – the Project will disturb the floor of an existing channel. This usually requires a Streambed Alteration Agreement (Section 1602 permit) from the California Department of Fish and Game. This will be performed coincidentally with the CEQA process.

Water rights/transfer agreements – KDWCD, COV, and any future marketing partners will secure the appropriate approvals for water transfers.

Well Drilling Permit - The contractor drilling the irrigation well will be required to obtain a well drilling permit from the County of Tulare prior to drilling.

Dust Control Plan. A Dust Control Plan will be needed. The plan will be submitted to the local Air Quality Control Board one month before construction. The District's engineering consultant will prepare the plan.

Storm Water Pollution Prevention Plan. A Storm Water Pollution Prevention Plan will be needed. The District's engineering consultant will prepare and submit the plan.

FUNDING PLAN AND LETTERS OF COMMITMENT

(1) Describe how the applicant will make its contribution to the cost share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g., reserve account, tax revenue, and/or assessments).

KDWCD will make its contribution to the cost-share requirement through contracts with the District's local engineering firms to develop the CEQA documentation, necessary permitting and final design. During the Project's construction, the District will provide cost-share contribution in the form of Project Administration by the District's staff engineer; Construction staking, inspection and miscellaneous engineering by the District's consulting engineer; as well as direct funding towards the Project's construction efforts. The resolution adopted on January 3, 2012 by the District's Board of Directors (see **Appendix A**) commits to make these funds available if the Project is selected for funding and the Bureau accepts the contributions outlined in the funding plan.

If funding is not awarded, then KDWCD might have to wait until funding (either this grant or another source) becomes available before proceeding with the Project. **Appendix D** includes the most current financial report showing the District's reserve funds from several different accounts.

(2) Describe any in-kind costs incurred before the anticipated project start date that the applicant seeks to include as project costs.

The District will proceed with easement acquisition, CEQA, and preliminary design prior to the anticipated start date of October 1, 2012; which the District will seek to include as in-kind costs.

(3) Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.

\$78,989 will be provided through California's Proposition 84 IRWM grant funds.

(4) Describe any other funding requested or received for the proposed work from other Federal partners.

No other Federal funding requests have been made for the proposed work.

(5) Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.

There are no pending funding request for this project.

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Table 1. Summary of Federal and Non-Federal funding sources.

Funding Sources	Funding Amount
Non-Federal Entities	
1. KDWCD – Visalia Water Management Committee	\$731,877
2. State of California – Proposition 84 IRWM Funds	\$78,989
<i>Non-Federal Subtotal:</i>	\$810,866
Other Federal Entities	
1. N/A	\$0
<i>Other Federal Subtotal:</i>	\$0
<i>Requested Reclamation Funding:</i>	\$800,000
<i>Total Project Funding:</i>	\$1,610,866

OFFICIAL RESOLUTION

Appendix A includes Resolution 2012-01 authorizing the preparation of this application and funding for the District's cost share. This resolution was adopted at the January 3, 2012, Board meeting. The Board of Directors is comprised of local landowners, so the resolution will also represent support for the Project from local population.

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BUDGET PROPOSAL

Below is a budget proposal for the Project. Detailed cost estimates are included in **Appendix B**.

BUDGET ITEM DESCRIPTION	COMPUTATION		RECIPIENT FUNDING	RECLAMATION FUNDING	TOTAL COST
	\$/Unit and Unit	Quantity			
SALARIES AND WAGES - KDWCD					
District Engineer	\$48.43/hr	416	\$19,344	\$0	\$19,344
FRINGE BENEFITS - KDWCD					
District Engineer	\$15.20/hr	416	\$7,156	\$0	\$7,156
TRAVEL -			\$0	\$0	\$0
EQUIPMENT -			\$0	\$0	\$0
SUPPLIES/MATERIALS -			\$0	\$0	\$0
CONTRACTUAL/CONSTRUCTION ¹					
Engineering Fees	\$166,080/Contract	1	\$166,080	\$0	\$166,080
Packwood Creek Improvements	\$1,080,000/Contract	1	\$280,000	\$800,000	\$1,080,000
Oakes Basin Habitat Improvements	\$164,706/Contract	1	\$164,706	\$0	\$164,706
ENVIRONMENTAL AND REGULATORY COMPLIANCE ²	Total Project Cost	4.1%	\$65,580	\$0	\$65,580
OTHER					
Contingencies ³	Packwood Improvements	10%	\$108,000	0	\$108,000
TOTAL DIRECT COSTS			\$810,866	\$800,000	\$1,610,866
INDIRECT COSTS					
TOTAL PROJECT COSTS			\$810,866	\$800,000	\$1,610,866
PERCENTAGE OF COSTS			50.3%	49.7%	

¹ Contracts should be broken out into specific line items. Lump sum estimates are not acceptable. Applications may attach a separate, detailed budget for each contract to adequately address all contract budget items.

² Environmental and regulatory compliance should be at least 1-2 percent unless a justification is provided for a lesser amount.

³ A 10% contingency was added for the construction of the basins primarily for uncertainty of costs at time of construction, but also for uncertainty in quantities, neglected items and unforeseen circumstances.

BUDGET NARRATIVE

Detailed cost estimates for the Project can be found in Appendix B.

Salaries and Wages – Due to the District not performing any of the construction, there will be no District Salaries and Wages accrued for the construction efforts. However, the District's staff engineer will be conducting the Project's Administration which includes Bureau quarterly reporting and the final report. The District's staff engineer will also be assisting the District's consultant engineer with the implementation of the mitigation measures, and the construction inspection. In addition to those duties, the District's staff engineer will also be authoring the Storm Water Pollution Prevention Plan (SWPPP) and the Dust Control Plan (DCP). The District's staff engineer's wages total \$48.43 per hour.

Fringe Benefits – Due to the District not performing any of the construction, there will be no District Fringe Benefits accrued for the construction efforts. However, as discussed under the salaries and wages category, the District's staff engineer will be an integral part of the Project's construction efforts. The District's staff engineer receives \$15.20 per hour in fringe benefits.

Travel – Due to the District not performing any of the construction, there will be no District travel expenses accrued.

Equipment – It is anticipated that all the heavy equipment that will be used in this Project will be supplied by the awarded contractor.

Materials and Supplies – All Material and Supply costs associated with the Project are included in the contractual category. All material and supplies for each of the contracts will be included under their individual contracts.

Contractual – It is anticipated that the Project will be accomplished through three separate contracts with KDWCD. The construction of the Packwood Creek Improvements will be covered under one general contract, to be competitively bid. The second contract will be for the Oakes Basin Habitat Improvements, to be competitively bid. The cost for the construction to be covered under each contract was estimated by the District's engineering consulting firm, using an engineer's estimate of probable costs. The costs used in the generation of the engineers estimate are based from previous costs confirmed through similar jobs recently completed in the area. The third contract will be with the District's engineering consulting firm to assist the District in the completion of the Project. Labor for the engineering consultants will be to complete environmental, design and administration of the Project. Labor will also include assistance to the District through construction inspection/ management and construction staking during the construction of the Project. The rates shown for all contractual categories are for budgetary purposes; the actual rates in effect at the time the work is performed will be charged to the Project.

Environmental and Regulatory Compliance Costs – The total estimated costs are \$65,580 which represents 4.1% of the total estimate Project cost. This includes an

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estimate of Reclamation's, the engineering consultant's, and the District Engineer's time.

Reporting – Reporting costs include the District staff engineer's time and engineering consultants time to prepare semi-annual reports and a final report. These costs will be therefore included in the Salaries and Wages, Fringe Benefits, and Contractual categories.

Other – A 10% contingency was added for the construction of the Packwood Creek Improvements primarily for uncertainty of costs at the time of construction, but also for uncertainty in quantities, neglected items and unforeseen circumstances.

Indirect Costs – N/A.

Total Cost – Total Project Cost is estimated to be \$1,610,866. The Federal share will be \$800,000 (49.7% of the total Project cost); and the applicant share will be \$810,866 (50.3% of the total Project Cost).

BUDGET INFORMATION - Construction Programs

NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.

COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Columns a-b)
1. Administrative and legal expenses	\$ <input style="width: 100px;" type="text" value="26,500.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="26,500.00"/>
2. Land, structures, rights-of-way, appraisals, etc.	\$ <input style="width: 100px;" type="text" value="0.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="0.00"/>
3. Relocation expenses and payments	\$ <input style="width: 100px;" type="text" value="0.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="0.00"/>
4. Architectural and engineering fees	\$ <input style="width: 100px;" type="text" value="166,080.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="166,080.00"/>
5. Other architectural and engineering fees	\$ <input style="width: 100px;" type="text" value="0.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="0.00"/>
6. Project inspection fees	\$ <input style="width: 100px;" type="text" value="0.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="0.00"/>
7. Site work	\$ <input style="width: 100px;" type="text" value="0.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="0.00"/>
8. Demolition and removal	\$ <input style="width: 100px;" type="text" value="0.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="0.00"/>
9. Construction	\$ <input style="width: 100px;" type="text" value="1,244,706.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="1,244,706.00"/>
10. Equipment	\$ <input style="width: 100px;" type="text" value="0.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="0.00"/>
11. Miscellaneous	\$ <input style="width: 100px;" type="text" value="65,580.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="65,580.00"/>
12. SUBTOTAL (sum of lines 1-11)	\$ <input style="width: 100px;" type="text" value="1,502,866.00"/>	\$ <input style="width: 100px;" type="text" value="0.00"/>	\$ <input style="width: 100px;" type="text" value="1,502,866.00"/>
13. Contingencies	\$ <input style="width: 100px;" type="text" value="108,000.00"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="108,000.00"/>
14. SUBTOTAL	\$ <input style="width: 100px;" type="text" value="1,610,866.00"/>	\$ <input style="width: 100px;" type="text" value="0.00"/>	\$ <input style="width: 100px;" type="text" value="1,610,866.00"/>
15. Project (program) income	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text"/>	\$ <input style="width: 100px;" type="text" value="0.00"/>
16. TOTAL PROJECT COSTS (subtract #15 from #14)	\$ <input style="width: 100px;" type="text" value="1,610,866.00"/>	\$ <input style="width: 100px;" type="text" value="0.00"/>	\$ <input style="width: 100px;" type="text" value="1,610,866.00"/>
FEDERAL FUNDING			
17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share.) Enter eligible costs from line 16c Multiply X <input style="width: 40px;" type="text"/> % Enter the resulting Federal share.			\$ <input style="width: 100px;" type="text" value="0.00"/>

APPENDIX A

**RESOLUTION NO. 2012-01
OF THE
BOARD OF DIRECTORS
OF THE
KAWEAH DELTA WATER CONSERVATION DISTRICT**

WHEREAS, the Kaweah Delta Water Conservation District (“District”) has prepared concepts for the Packwood Creek Water Conservation Project (“Project”), which will both provide increased groundwater recharge and facilitate water marketing by the Tulare Irrigation District to the City of Visalia; and

WHEREAS, the District desires to apply for and secure funds for the Project that may be made available by the U.S. Bureau of Reclamation (“Reclamation”) from its WaterSMART Water and Energy Efficiency Grant funding opportunity announced by Reclamation on November 7, 2011 (“Grant Program”); and

WHEREAS, the Board of Directors of the District has reviewed an application prepared for the District to seek funds for the Project from the Grant Program; and

WHEREAS, the Board of Directors of the District finds that the construction and resulting benefits of the Project are consistent with the authority and objectives of the District and, therefore, it can support the application for the Project; and

WHEREAS, the District has cash reserves and the ability to make in-kind contributions that can be used for new facilities and capital projects such as the Project in amounts sufficient to provide the amount of funding and/or in-kind contributions set forth in and required by the funding plan for the Grant Program; and

WHEREAS, the District desires to work with Reclamation to meet all established deadlines for entering into a cooperative agreement for the Project in accordance with the requirements of the Grant Program,

NOW, THEREFORE, upon motion by Director CLARK, seconded by Director GOMES, and unanimously carried, the Board of Directors of the District resolved as follows:

- a. that after reviewing the application to the Grant Program prepared for the District to submit to the Reclamation, it supports said application;
- b. that the District is capable of providing the amount of funding and/or in-kind contributions specified in the funding plan for the Project in accordance with the Grant Program;
- c. that the District will work with the Reclamation to meet established deadlines for entering into a cooperative agreement, by and between the District and Reclamation, for the Project; and
- d. that the President of the Board of Directors of the District has full authority to enter into said cooperative agreement.

CERTIFICATE OF RESOLUTION

I, Mark Larsen, hereby certify as follows:

1. That I am the Secretary of the Kaweah Delta Water Conservation District ("District"); and

2. That the foregoing resolution, consisting of three pages, including this page, is a true and correct copy of a resolution of the Board of Directors of the District passed at the meeting of the Board of Directors held on January 3, 2012, at the District's principal executive office, located at 2975 N. Farmersville Boulevard, Farmerville, California 93223

IN WITNESS WHEREOF, I have signed this certificate this 3rd day of January, 2012 at the District's principal executive office.



Mark Larsen, Secretary

APPENDIX B

Appendix B: ESTIMATE OF TOTAL PROJECT COST

**Kaweah Delta Water Conservation District
Packwood Creek Water Conservation Project**

STAFF HOURS	Subconsulting Labor Costs											Contracted Costs			Totals	
	Principal Engineer	Senior Engineer	Biologist/Planner	Assistant Engineer	Engineer-In-Training	Land Surveyor	Two Man GPS Survey Crew	Geotechnical Subconsultant (Geotech. Investigation)	Attorney/ Appraiser/ Real Property	Biological Subconsultant (Biological Assessments)	KDWCD Staff	Bureau of Reclamation	Contracted Labor, Material & Equipment Cost	Contingencies	Total Engineering Hours	Total Cost
	Rate / Hour	\$170	\$135	\$120	\$105	\$85	\$120	\$210						10%		
Task 1 Project Administration																
Task 1.1 Bureau Reporting & Contract Negotiation	40	32	0	24	8	0	0	\$0	\$0	\$0	\$5,000	\$0	\$0	\$0	104	\$19,320
Task 1.2 Draft Project Report	8	40	0	80	40	0	0	\$0	\$0	\$0	\$10,000	\$0	\$0	\$0	168	\$28,560
Task 1.3 Final Project Report	8	16	0	40	16	0	0	\$0	\$0	\$0	\$2,500	\$0	\$0	\$0	80	\$11,580
															Task 1 Total =	\$59,460
Task 2 CEQA & NEPA Documentation/Permitting																
Task 2.1 Environmental Compliance (CEQA)	0	0	160	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	160	\$19,200
Task 2.2 Environmental Compliance (NEPA)	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$12,500	\$0	\$0	0	\$12,500
Task 2.3 Biological Site Survey & Mitigation Measures	0	0	24	0	0	0	0	\$0	\$0	\$5,000	\$0	\$0	\$0	\$0	24	\$7,880
Task 2.4 CA Department of Fish & Game: 1602 Permit	0	24	0	0	40	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	64	\$6,640
Task 2.5 Army Corps of Engineers: 404 Permit	0	24	0	0	40	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	64	\$6,640
Task 2.6 Regional Water Quality Control Board: SWPPP	0	24	0	40	0	0	0	\$0	\$0	\$0	\$1,000	\$0	\$0	\$0	64	\$8,440
Task 2.7 Air Resources Control Board: DCP	0	8	0	40	0	0	0	\$0	\$0	\$0	\$1,000	\$0	\$0	\$0	48	\$6,280
															Task 2 Total =	\$67,580
Task 3 Engineering/Inspection/Construction Staking																
Task 3.1 Topographic Survey	0	0	0	8	24	8	24	\$0	\$0	\$0	\$0	\$0	\$0	\$0	64	\$8,880
Task 3.2 Easement Acquisition	0	0	0	0	0	80	0	\$0	\$12,000	\$0	\$2,500	\$0	\$0	\$0	80	\$24,100
Task 3.3 30% Design	8	24	0	40	80	0	0	\$0	\$0	\$0	\$1,000	\$0	\$0	\$0	152	\$16,600
Task 3.4 60% Design	8	16	0	32	64	0	0	\$0	\$0	\$0	\$1,000	\$0	\$0	\$0	120	\$13,320
Task 3.5 90% Design	8	16	0	40	80	0	0	\$0	\$0	\$0	\$1,000	\$0	\$0	\$0	144	\$15,520
Task 3.6 Generation of Specifications and Final Design	8	16	0	40	64	0	0	\$0	\$0	\$0	\$1,000	\$0	\$0	\$0	128	\$14,160
Task 3.7 Project Bid and Award	2	4	0	16	0	0	0	\$0	\$0	\$0	\$500	\$0	\$0	\$0	22	\$3,060
Task 3.8 Construction Staking	0	0	0	0	0	0	24	\$0	\$0	\$0	\$0	\$0	\$0	\$0	24	\$5,040
Task 3.9 Construction Inspection/Miscellaneous Engineering	4	16	0	40	40	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	100	\$10,440
Task 3.10 Geotechnical Engineering (Materials Testing)	0	0	0	0	0	0	0	\$20,000	\$0	\$0	\$0	\$0	\$0	\$0	0	\$20,000
															Task 3 Total =	\$131,120
Task 4 Construction of Water Retention Facilities																
Task 4.1 Packwood Creek Improvements	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$1,080,000	\$108,000	0	\$1,188,000
Task 4.2 Oakes Basin Improvements	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$164,706	\$0	0	\$164,706
															Task 4 Total =	\$1,352,706
Total Hours:	94	260	184	440	496	88	48									
Total Cost:	\$15,980	\$35,100	\$22,080	\$46,200	\$42,160	\$10,560	\$10,080	\$20,000	\$12,000	\$5,000	\$26,500	\$12,500	\$1,244,706	\$108,000	626	\$1,610,866

TOTAL ESTIMATED PROJECT COST: **\$1,610,866**

Appendix B - Budget
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
Kaweah Delta Water Conservation District
Packwood Creek Water Conservation Project

Item No.	Item Description	Estimated Quantity	Per Unit Cost	Unit	Amount
Packwood Creek Improvements					
1	Control Structure #1 - Structural Concrete	60	\$ 1,500.00	CY	\$ 90,000
2	Control Structure #2 - Structural Concrete	60	\$ 1,500.00	CY	\$ 90,000
3	Control Structure #3 - Structural Concrete	60	\$ 1,500.00	CY	\$ 90,000
4	Control Structure #4 - Structural Concrete	60	\$ 1,500.00	CY	\$ 90,000
5	Construct Metal Catwalk	5	\$ 20,000.00	EA	\$ 100,000
6	F&I Automated Control Gates	5	\$ 90,000.00	EA	\$ 450,000
7	Misc. Earthwork	10,000	\$ 5.00	CY	\$ 50,000
				SUBTOTAL	\$ 960,000
SCADA/Integration					
8	Site Integration (5 structures and Oakes Basin)	6	\$ 20,000.00	EA	\$ 120,000
				SUBTOTAL	\$ 120,000
	Packwood Creek Improvements Contingency		10	%	\$ 96,000
	SCADA/Integration Contingency		10	%	\$ 12,000
	Grand Total				\$ 1,188,000

Attachment 4 - Budget

Proposal Title: 2011 Groundwater Recharge, Waste Water Reuse, Habitat Restoration and Water Quality Protection Projects Proposal

Project Title: Oakes Basin Habitat Enhancement Project

Budget Category	No. of Units	Per Unit Cost	Unit	(a)	(b)	(c)	(d)	(e)
				Non-State Share* (Funding Match)	Requested Grant Funding	Other State Funds Being Used	Total	% Funding Match
(a) Direct Project Administration Costs								
DWR Grant Administration: KDWCD	204	\$ 61.25	Staff Hours	\$ 12,500	\$ -	\$ -	\$ 12,500	27.9%
DWR Grant Reporting: KDWCD	245	\$ 61.25	Staff Hours	\$ 15,000	\$ -	\$ -	\$ 15,000	33.4%
Office Supplies (Printing, etc.)	1	\$ 2,394.00	Lump Sum	\$ 2,394	\$ -	\$ -	\$ 2,394	5.3%
(b) Land Purchase/Easement¹								
	--	--	--	\$ -	\$ -	\$ -	\$ -	0.0%
(c) Planning/Design/Engineering/Environmental Documentation								
Assessment and Evaluation								
Habitat Vegetation Plan ¹	--	--	--	\$ -	\$ -	\$ -	\$ -	0.0%
Biological Review 60% (Concept) Design	16	\$ 110.00	Staff Hours	\$ 1,760	\$ -	\$ -	\$ 1,760	3.9%
Irrigation Well Capacity Estimate	40	\$ 105.00	Staff Hours	\$ 4,200	\$ -	\$ -	\$ 4,200	9.4%
Final Design								
90% (Pre-Final) Design								
Irrigation Well Construction Drawings	52	\$ 88.62	Staff Hours	\$ -	\$ 4,608	\$ -	\$ 4,608	0.0%
Irrigation System Construction Drawings	52	\$ 88.62	Staff Hours	\$ -	\$ 4,608	\$ -	\$ 4,608	0.0%
100% (Final) Design	52	\$ 100.77	Staff Hours	\$ 2,361	\$ 2,879	\$ -	\$ 5,240	5.3%
Environmental Documentation								
Biological Assessment	8	\$ 110.00	Staff Hours	\$ 880	\$ -	\$ -	\$ 880	2.0%
CEQA Compliance - Category Exclusion	8	\$ 110.00	Staff Hours	\$ 880	\$ -	\$ -	\$ 880	2.0%
Permitting								
Storm Water Pollution Prevention Plan (SWPPP)	80	\$ 61.25	Staff Hours	\$ 4,900	\$ -	\$ -	\$ 4,900	10.9%
(d) Construction/Implementation								
Construction Contracting and Deliverables								
Notice to Bidders	26	\$ 100.77	Staff Hours	\$ -	\$ 2,620	\$ -	\$ 2,620	0.0%
Pre-Bid Meeting and Addendum No. 1	26	\$ 100.77	Staff Hours	\$ -	\$ 2,620	\$ -	\$ 2,620	0.0%
Bid Opening and Bid Evaluation	18	\$ 94.67	Staff Hours	\$ -	\$ 1,704	\$ -	\$ 1,704	0.0%
Bid Award	18	\$ 94.67	Staff Hours	\$ -	\$ 1,704	\$ -	\$ 1,704	0.0%
Construction Staking	16	\$ 210.00	Staff Hours	\$ -	\$ 3,360	\$ -	\$ 3,360	0.0%
Miscellaneous Engineering Services	16	\$ 140.00	Staff Hours	\$ -	\$ 2,240	\$ -	\$ 2,240	0.0%
Vegetation Plan Plant Installation								
F&I Custom Collected Plants	230	\$ 8.25	EA	\$ -	\$ 1,898	\$ -	\$ 1,898	0.0%
F&I Tree Shelters & T-posts for Tree Support	152	\$ 8.25	EA	\$ -	\$ 1,254	\$ -	\$ 1,254	0.0%
Construct Individual Irrigation Basins	230	\$ 2.75	EA	\$ -	\$ 633	\$ -	\$ 633	0.0%
F&I Wood Chip Mulch within Individual Irrigation Basins	15	\$ 33.12	CY	\$ -	\$ 497	\$ -	\$ 497	0.0%
Vegetation Plan Plant Irrigation System								
Construct/Drill Low Volume Irrigation Well	150	\$ 200.00	Staff Hours	\$ -	\$ 30,000	\$ -	\$ 30,000	0.0%
F&I 10" SCH 40 PVC Perf Casing	300	\$ 50.00	LF	\$ -	\$ 15,000	\$ -	\$ 15,000	0.0%
F&I Designed Sump/Servable Pump	1	\$ 10,000.00	EA	\$ -	\$ 10,000	\$ -	\$ 10,000	0.0%
F&I Pump Pad with Pressure Tank	1	\$ 5,000.00	EA	\$ -	\$ 5,000	\$ -	\$ 5,000	0.0%
F&I Electrical Service to Well	1	\$ 5,000.00	Lump Sum	\$ -	\$ 5,000	\$ -	\$ 5,000	0.0%
F&I 3" SCH 40 PVC Irrigation Distribution System	100	\$ 10.00	LF	\$ -	\$ 1,000	\$ -	\$ 1,000	0.0%
F&I Above Ground Bubbler Irrigation System	230	\$ 29.00	Plant	\$ -	\$ 6,670	\$ -	\$ 6,670	0.0%

Attachment 4 - Budget

Proposal Title: 2011 Groundwater Recharge, Waste Water Reuse, Habitat Restoration and Water Quality Protection Projects Proposal

Project Title: Oakes Basin Habitat Enhancement Project

Budget Category	No. of Units	Per Unit Cost	Unit	(a) Non-State Share* (Funding Match)	(b) Requested Grant Funding	(c) Other State Funds Being Used	(d) Total	(e) % Funding Match
(e) Environmental Compliance/Mitigation/Enhancement								
O&M Weed Control within Individual Irrigation Basins (Semi-Annual)	6	\$ 186.67	Visit	\$ -	\$ 1,120	\$ -	\$ 1,120	0.0%
O&M Weed Control within Planting Area (Semi-Annual)	6	\$ 315.83	Visit	\$ -	\$ 1,895	\$ -	\$ 1,895	0.0%
F&I Plant Replacement (15% of original planted)	39	\$ 10.56	Plant	\$ -	\$ 412	\$ -	\$ 412	0.0%
O&M Above Ground Bubbler Irrigation System	230	\$ 11.38	Plant	\$ -	\$ 2,617	\$ -	\$ 2,617	0.0%
O&M Individual Irrigation Basins	230	\$ 1.51	EA	\$ -	\$ 347	\$ -	\$ 347	0.0%
(f) Construction Administration								
Construction Management: District Engineer	40	\$ 61.25	Staff Hours	\$ -	\$ 2,450	\$ -	\$ 2,450	0.0%
(g) Other Costs								
--	--	\$ -	--	\$ -	\$ -	\$ -	\$ -	0.0%
(h) Construction/Implementation Contingency								
Vegetation Plan Plant Installation								
F&I Custom Collected Plants	1	\$ 189.80	Lump Sum	\$ -	\$ 190	\$ -	\$ 190	0.0%
F&I Tree Shelters & T-posts for Tree Support	1	\$ 125.00	Lump Sum	\$ -	\$ 125	\$ -	\$ 125	0.0%
Construct Individual Irrigation Basins	1	\$ 71.00	Lump Sum	\$ -	\$ 63	\$ -	\$ 63	0.0%
F&I Wood Chip Mulch within Individual Irrigation Basins	1	\$ 56.00	Lump Sum	\$ -	\$ 50	\$ -	\$ 50	0.0%
Vegetation Plan Plant Irrigation System								
Construct/Drill Low Volume Irrigation Well	1	\$ 3,000.00	Lump Sum	\$ -	\$ 3,000	\$ -	\$ 3,000	0.0%
F&I 10" SCH 40 PVC Perf Casing	1	\$ 1,500.00	Lump Sum	\$ -	\$ 1,500	\$ -	\$ 1,500	0.0%
F&I Designed Sumpersible Pump	1	\$ 1,000.00	Lump Sum	\$ -	\$ 1,000	\$ -	\$ 1,000	0.0%
F&I Pump Pad with Pressure Tank	1	\$ 500.00	Lump Sum	\$ -	\$ 500	\$ -	\$ 500	0.0%
F&I Electrical Service to Well	1	\$ 500.00	Lump Sum	\$ -	\$ 500	\$ -	\$ 500	0.0%
F&I 3" SCH 40 PVC Irrigation Distribution System	1	\$ 100.00	Lump Sum	\$ -	\$ 100	\$ -	\$ 100	0.0%
F&I Above Ground Bubbler Irrigation System	1	\$ 751.00	Lump Sum	\$ -	\$ 667	\$ -	\$ 667	0.0%
(i) Grand Total				\$ 44,875	\$ 119,831	\$ -	\$ 164,706	27.2%

¹Funds for these line items were incurred prior to September 30, 2008

*All Non-State Share funding will be funded by Kaweah Delta Water Conservation District through their District Financial Reserves

APPENDIX C

APPENDIX D

Water Management Program: 2011 Status Report

Kaweah Delta Water Conservation District / City of Visalia Program Funding (Calender Year 2011)

DESCRIPTION	GENERAL PROGRAM		INDIVIDUAL PROGRAMS					
			Water Rights		Water Purchase		Design & Construction	
	Activity	Balance	Activity	Balance	Activity	Balance	Activity	Balance
Beginning Balance		747,400.70		111,531.70		14,664.71		621,204.29
Program Transfer		747,400.70		111,531.70	150,000.00	164,664.71	(150,000.00)	471,204.29
January Payment	10,362.92	757,763.62	1,036.30	112,568.00	2,072.58	166,737.29	7,254.04	478,458.33
January Disbursement	(10,717.89)	747,045.73		112,568.00		166,737.29	(10,717.89)	467,740.44
February Payment	10,362.92	757,408.65	1,036.30	113,604.30	2,072.58	168,809.87	7,254.04	474,994.48
February Disbursement	-	757,408.65		113,604.30		168,809.87		474,994.48
March Payment	10,362.92	767,771.57	1,036.30	114,640.60	2,072.58	170,882.45	7,254.04	482,248.52
March Disbursement		767,771.57		114,640.60		170,882.45		482,248.52
Jan/Feb/Mar Interest	969.42	768,740.99	144.12	114,784.72	215.47	171,097.92	609.83	482,858.35
April Payment	10,362.92	779,103.91	1,036.30	115,821.02	2,072.58	173,170.50	7,254.04	490,112.39
April Disbursement		779,103.91		115,821.02		173,170.50		490,112.39
May Payment	10,362.92	789,466.83	1,036.30	116,857.32	2,072.58	175,243.08	7,254.04	497,366.43
May Disbursement	(2,949.07)	786,517.76		116,857.32		175,243.08	(2,949.07)	494,417.36
June Payment	10,362.92	796,880.68	1,036.30	117,893.62	2,072.58	177,315.66	7,254.04	501,671.40
June Disbursement	(29,405.21)	767,475.47		117,893.62	(29,390.09)	147,925.57	(15.12)	501,656.28
Apr/May/June Interest	957.44	768,432.91	147.07	118,040.69	184.54	148,110.11	625.83	502,282.11
July Payment	10,528.72	778,961.63	1,052.88	119,093.57	2,105.74	150,215.85	7,370.10	509,652.21
July Disbursement	(4,551.79)	774,409.84		119,093.57		150,215.85	(4,551.79)	505,100.42
August 2011 Payment	10,528.72	784,938.56	1,052.88	120,146.45	2,105.74	152,321.59	7,370.10	512,470.52
September 2011 Payment	10,528.72	795,467.28	1,052.88	121,199.33	2,105.74	154,427.33	7,370.10	519,840.62
September Disbursement	(8,328.13)	787,139.15		121,199.33		154,427.33	(8,328.13)	511,512.49
July/Aug/Sept Interest	587.84	787,726.99	90.09	121,289.42	115.36	154,542.69	382.39	511,894.88
October 2011 Payment	10,528.72	798,255.71	1,052.88	122,342.30	2,105.74	156,648.43	7,370.10	519,264.98
November 2011 Payment	10,528.72	808,784.43	1,052.88	123,395.18	2,105.74	158,754.17	7,370.10	526,635.08

APPENDIX E

Water Conserved

In-line basin on Packwood Creek	Monthly Recharge (AF/month)	Fill-up Total (AF)	Annual Recharge (AF/yr)
Check #5	20	7.7	247.7
Check #4	27	13.2	337.2
Check #3	20	9.7	249.7
Check #2	24	15.2	303.2
Check #1	26	15	327
TOTAL			1465

Water Better Managed

Avg Max Daily Mean Flow (1980-2007)=	105	CFS/Day
Proposed Days in use (4.7 months)=	141	Days
AF Passing Through Channel		
(105 CFS/Day * 1.983 AF/CFS-day / 141 Days)=	29,360	AF

APPENDIX F



December 28, 2011

Bureau of Reclamation
Attn: Michelle Maher
Mail Code: 84-27810
P.O. Box 25007
Denver, CO 80225

Re: Kaweah Delta Water Conservation District
Packwood Creek Water Conservation Project Grant Application

Dear Ms. Maher:

The City of Visalia (City) supports the efforts of the Kaweah Delta Water Conservation District (KDWCD) in their pursuit of a WaterSMART grant application from the United States Department of the Interior, Bureau of Reclamation (Bureau) for Fiscal Year 2012. This grant application involves the development of increased recharge capabilities along Packwood Creek by installing automated control structures and a regulation basin. Also, ancillary benefits will be achieved through habitat improvements and energy savings. The City believes strongly that this project will benefit the region's groundwater supplies and be an effective tool for efficient water management.

Our organization recognizes the importance of sound water management and conservation projects, and the significant role they play in stabilizing the local water supply. The City and KDWCD have a long history of coordinating water management projects and programs aimed at managing water supplies in the area to meet local demands. The Packwood Creek Project is envisioned to be one of these projects that will assist in securing a viable water supply for the local area. The City strongly encourages the Bureau to consider funding KDWCD in their pursuit of this grant application.

Sincerely,

A handwritten signature in blue ink, appearing to read 'S. Salomon', is written over the word 'Sincerely,'.

Steven M. Salomon
City Manager

Persian Ditch Company

P.O. Box 366

Farmersville, CA 93223

January 4, 2012

Bureau of Reclamation
Attn: Michelle Maher
Mail Code: 84-27810
P.O. Box 25007
Denver, CO 80225

Re: Kaweah Delta Water Conservation District
Packwood Creek Water Conservation Project Grant Application

Dear Ms. Maher:

Persian Ditch Company supports the efforts of the Kaweah Delta Water Conservation District (KDWCD) in their pursuit of a WaterSMART grant application from the United States Department of the Interior, Bureau of Reclamation (Bureau) for Fiscal Year 2012. This grant application involves the development of increased recharge capabilities along Packwood Creek, by installing automated control structures and a regulation basin. Also, ancillary benefits will be achieved through habitat improvements and energy savings. Persian Ditch Company believes strongly that this project will benefit the region's groundwater supplies and be an effective tool for efficient water management.

Our organization recognizes the importance of sound water management and conservation projects, and the significant role they play in stabilizing the local water supply. Persian Ditch Company and KDWCD have a long history of coordinating water management projects and programs aimed at managing water supplies in the area to meet local demands. The Packwood Creek Project is envisioned to be one of these projects that will assist in securing a viable water supply for the local area. Persian Ditch Company strongly encourages the Bureau to consider funding KDWCD in their pursuit of this grant application.

Sincerely,



James Silva
Manager

FRIANT WATER AUTHORITY

December 28, 2011

Harvey A. Bailey
Chairman of the Board

Nick Canata
Vice Chairman

Tom Runyon
Secretary/Treasurer

Ronald D. Jacobsma
General Manager

Jennifer T. Buckman
General Counsel

Bureau of Reclamation
Attn: Michelle Maher
Mail Code: 84-27810
P.O. Box 25007
Denver, CO 80225

Re: Kaweah Delta Water Conservation District
Packwood Creek Water Conservation Project Grant Application

Dear Ms. Maher:

The Friant Water Authority (Authority) supports the efforts of the Kaweah Delta Water Conservation District (KDWCD) in their pursuit of a WaterSMART grant application from the United States Department of the Interior, Bureau of Reclamation (Bureau) for Fiscal Year 2012. This grant application involves the development of increased recharge capabilities along Packwood Creek, by installing automated control structures and a regulation basin. Also, ancillary benefits will be achieved through habitat improvements and energy savings. The Authority believes strongly that this project will benefit the region's groundwater supplies and be an effective tool for efficient water management.

The Authority is a Joint powers authority consisting of twenty water-related districts in the southern San Joaquin Valley that contract for water supplies from the Friant Division of the Central Valley Project. The Authority operates and maintains the Friant-Kern Canal, which is a major conveyance feature of the Friant Division, and represents the common interests of its members on various water resources and water policy issues. The Friant Diversion service area includes approximately on million acres and 15,000 mostly small family farms on the east side of the southern San Joaquin Valley (Merced, Madera, Fresno, Tulare and Kern Counties).

Member Agencies
Arvin-Edison W.S.D.
Delano-Earlimart I.D.
Eseter I.D.
Fresno I.D.
Ivanhoe I.D.
Kaweah Delta W.C.D.
Kern-Tulare W.D.
Lindmore I.D.
Lindsay-Strathmore I.D.
Lower Tule River I.D.
Madera I.D.
Orange Cove I.D.
Pixley I.D.
Porterville I.D.
Saucelito I.D.
Shafter-Wasco I.D.
Stone Corral I.D.
Tea Pot Dome W.D.
Terra Bella I.D.
Tulare I.D.

Main Office
854 N. Harvard Avenue
Lindsay, CA 93247

Phone: 559-562-6305
Fax: 559-562-3496

Sacramento Office
1107 9th Street, Suite 640
Sacramento, CA 95814

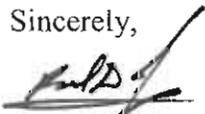
Phone: 916-346-4165
Fax: 916-346-3429

Website: www.friantwater.org

Michelle Maher
December 28, 2011
Page 2

Our organization recognizes the importance of sound water management and conservation projects, and the significant role they play in stabilizing the local water supply. The Authority and KDWCD have a long history of coordinating water management projects and programs aimed at managing water supplies in the area to meet local demands. The Packwood Creek Project is envisioned to be one of these projects that will assist in securing a viable water supply for the local area. The Authority strongly encourages the Bureau to consider funding KDWCD in their pursuit of this grant application.

Sincerely,

A handwritten signature in black ink, appearing to read "RDJ", written over a horizontal line.

Ronald D. Jacobsma
General Manager

RDJ:tm



TULARE IRRIGATION DISTRICT

6826 Avenue 240 • Tulare, California 93274 • Telephone (559) 686-3425

January 10, 2012

Bureau of Reclamation
Attn: Michelle Maher
Mail Code: 84-27810
P.O. Box 25007
Denver, CO 80225

Subject: Kaweah Delta Water Conservation District – USBR WaterSMART Packwood
Creek Water Conservation Project Grant Application

Dear Ms. Maher:

The Tulare Irrigation District (TID) supports the efforts of the Kaweah Delta Water Conservation District (KDWCD) in their pursuit of a WaterSMART grant application from the United States Department of the Interior, Bureau of Reclamation (Bureau) for Fiscal Year 2012. This grant application involves the development of increased recharge capabilities along Packwood Creek, by installing automated control structures and a regulation basin. Also, ancillary benefits will be achieved through habitat improvements and energy savings. TID believes strongly that this project will benefit the region's groundwater supplies and be an effective tool for efficient water management.

TID recognizes the importance of sound water management and conservation projects, and the significant role they play in stabilizing the local water supply. TID and KDWCD have a long history of coordinating water management projects and programs aimed at managing water supplies in the area to meet local demands. The Packwood Creek Project is envisioned to be one of these projects that will assist in securing a viable water supply for the local area. TID strongly encourages the Bureau to consider funding KDWCD in their pursuit of this grant application.

Sincerely,


J. Paul Hendrix
District Manager

EVANS DITCH COMPANY

6826 AVENUE 240
TULARE, CA 93274
TELEPHONE: (559) 686-3425

January 10, 2012

Bureau of Reclamation
Attn: Michelle Maher
Mail Code: 84-27810
P.O. Box 25007
Denver, CO 80225

Re: Kaweah Delta Water Conservation District
Packwood Creek Water Conservation Project Grant Application

Dear Ms. Maher:

The Evans Ditch Company supports the efforts of the Kaweah Delta Water Conservation District (KDWCD) in their pursuit of a WaterSMART grant application from the United States Department of the Interior, Bureau of Reclamation (Bureau) for Fiscal Year 2012. This grant application involves the development of increased recharge capabilities along Packwood Creek, by installing automated control structures and a regulation basin. Also, ancillary benefits will be achieved through habitat improvements and energy savings. Evans Ditch Company believes strongly that this project will benefit the region's groundwater supplies and be an effective tool for efficient water management.

The Evans Ditch Company recognizes the importance of sound water management and conservation projects, and the significant role they play in stabilizing local water supplies. Evans Ditch Company and KDWCD have a long history of coordinating water management projects and programs aimed at managing water supplies in the area to meet local demands. The Packwood Creek Project is envisioned to be one of these projects that will assist in securing a viable water supply for the local area. Evans Ditch Company strongly encourages the Bureau to consider funding KDWCD in their pursuit of this grant application.

Sincerely,


J. Paul Hendrix
Secretary

APPENDIX G

Kaweah Delta Water Conservation District Oakes Basin Demonstration Project

Draft Technical Memorandum No. 2 Basis of Design

1. Overview and Background

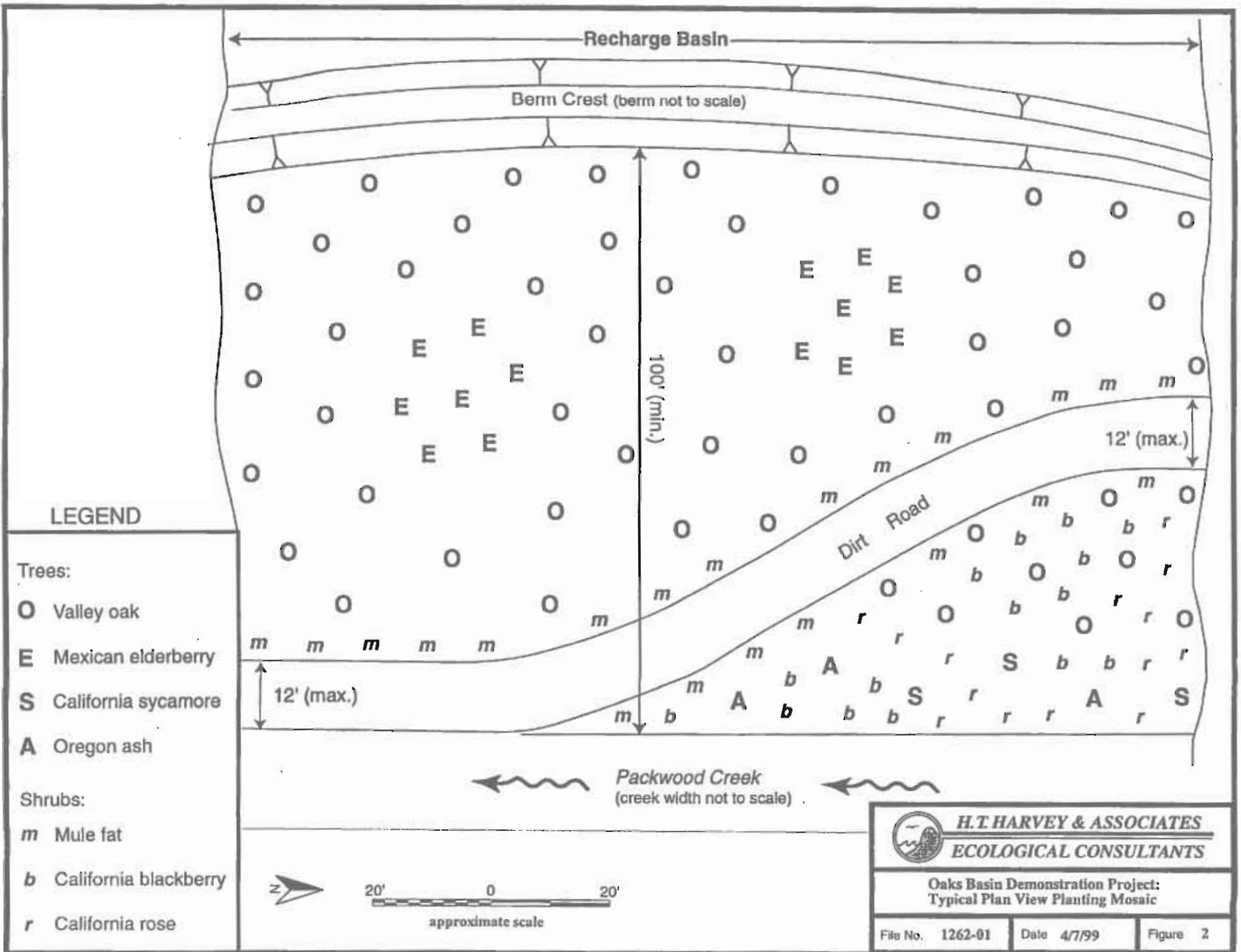
The Oakes Basin Demonstration Project is an integrated resource management project to provide flood control, groundwater recharge, and habitat enhancement for the Visalia area. The project is part of the Kaweah River Corridor Enhancement Study, a multi-year study to evaluate the feasibility of developing integrated resource management projects within the Kaweah River corridor. The study is being funded by the U.S. Bureau of Reclamation, with the Kaweah Delta Water Conservation District (District), the City of Visalia, and Tulare County providing local sponsorship. The project will involve construction of groundwater recharge/storm water detention ponds and associated facilities on the site to accomplish the following general goals:

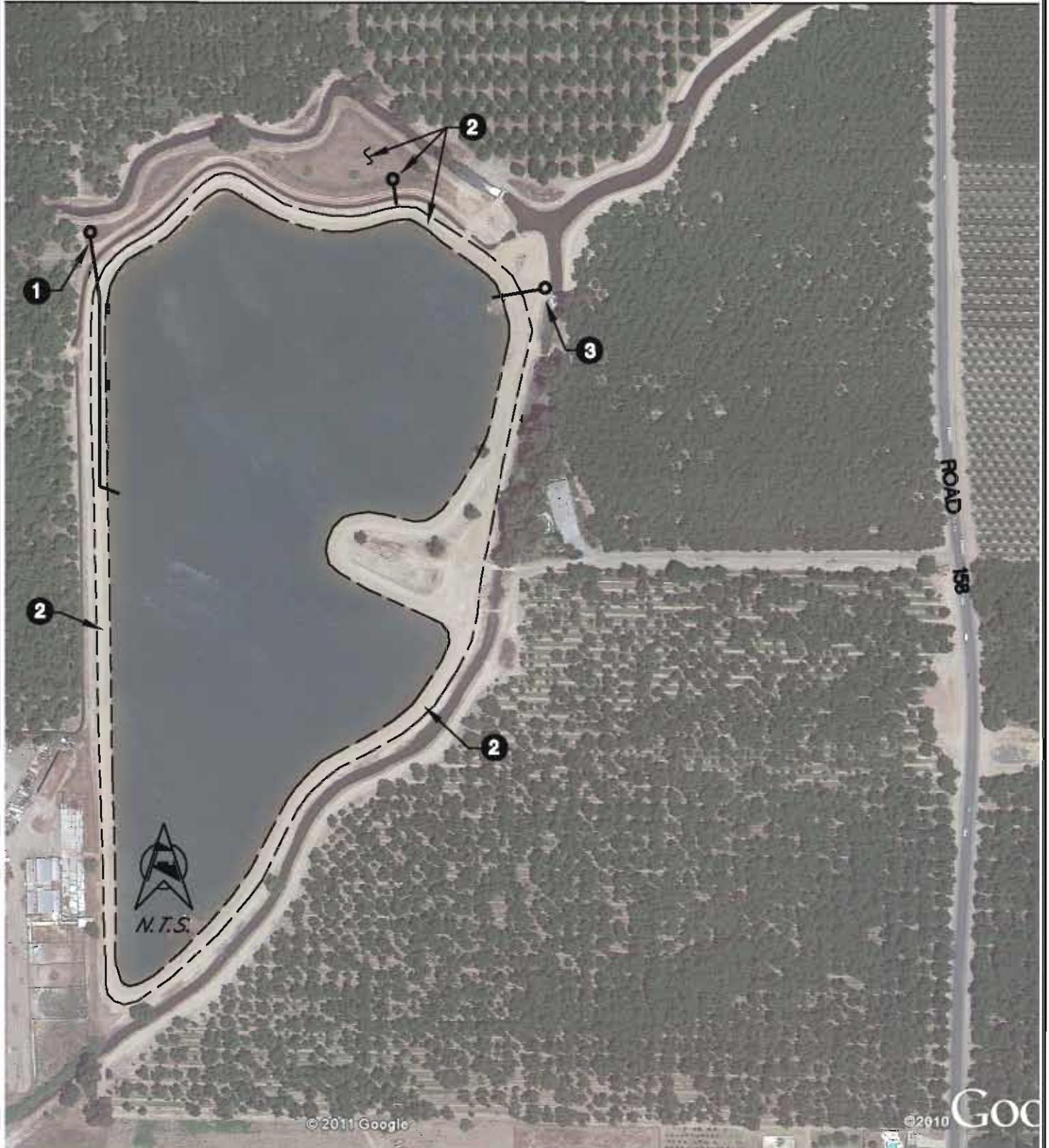
- Recharge the groundwater to help offset long-term declining groundwater levels due to municipal and agricultural pumping.
- Provide storm water detention facilities to help alleviate nuisance flooding in the City of Visalia.
- Restore riparian and valley oak habitat along the Kaweah River corridor.

The purpose of this technical memorandum is to provide the basis of design for the Oakes Basin Demonstration Project. Following this introduction section, Section 2 – Project Component Design presents preliminary design details for each of the project elements. Section 3 – General Design Criteria presents the criteria used for the design of the demonstration project. The technical memorandum concludes with Section 4 – Project Implementation, which includes a preliminary construction cost estimate, a relational schedule and discussion of construction phasing and sequencing.

2. Project Component Design

This section describes the design for each of the major elements of the project. Each description also includes a discussion of the rationale for selection of the particular design. A plan view of the project, showing all major components, is shown in Figure 2-1. Table 2-1 summarizes project components, including key features and construction phasing.





NOTE: PROJECT LOCATION IS SECTIONS 25 AND 26 OF T18S, R25E, MDB&M

SITE DESCRIPTION

- 1. PUMPING PLANT WITH INTAKE DISCHARGE PIPELINES.
- 2. HABITAT ENHANCEMENT AREA AND IRRIGATION WELL
- 3. STRUCTURE AND DISCHARGE PIPE

PRELIMINARY

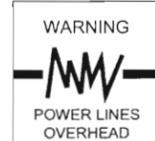
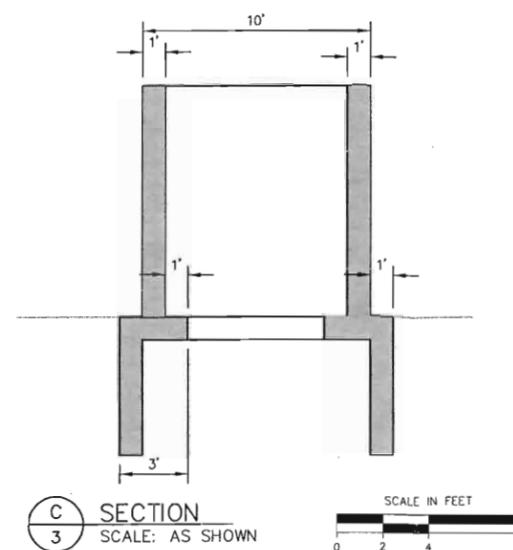
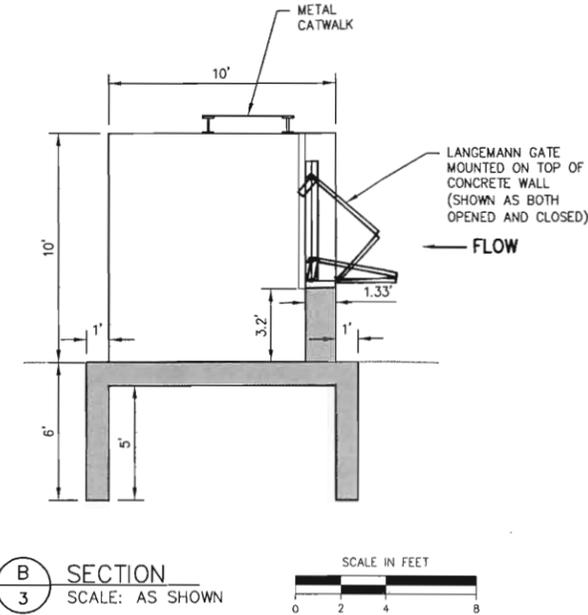
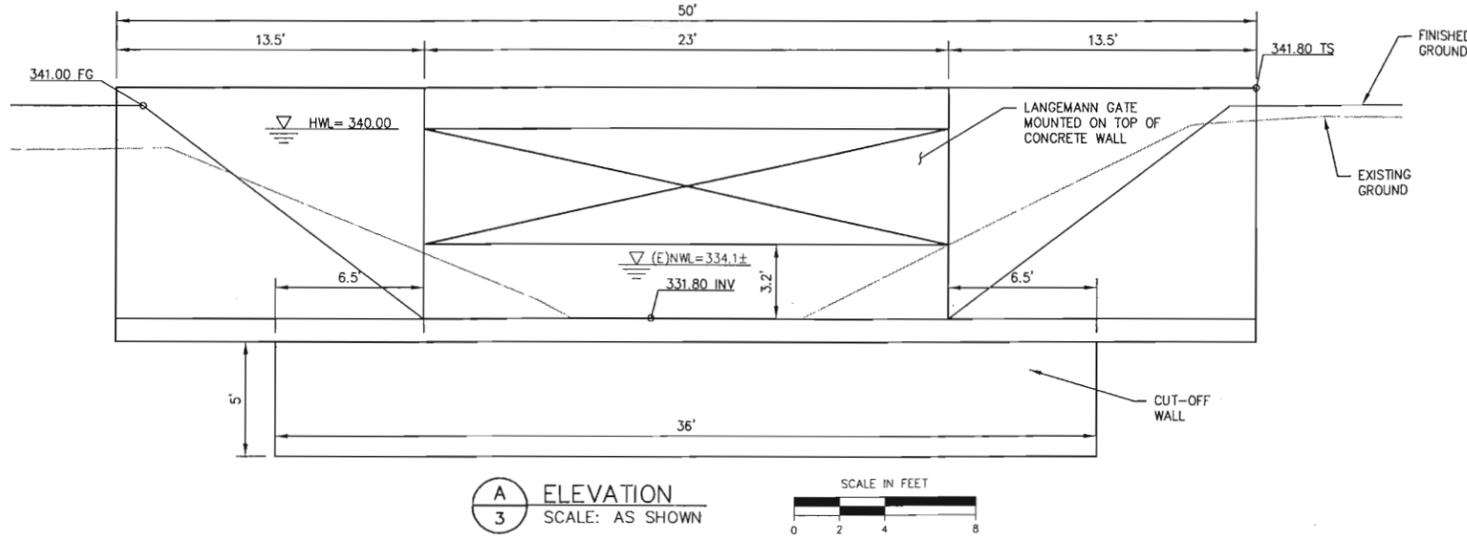
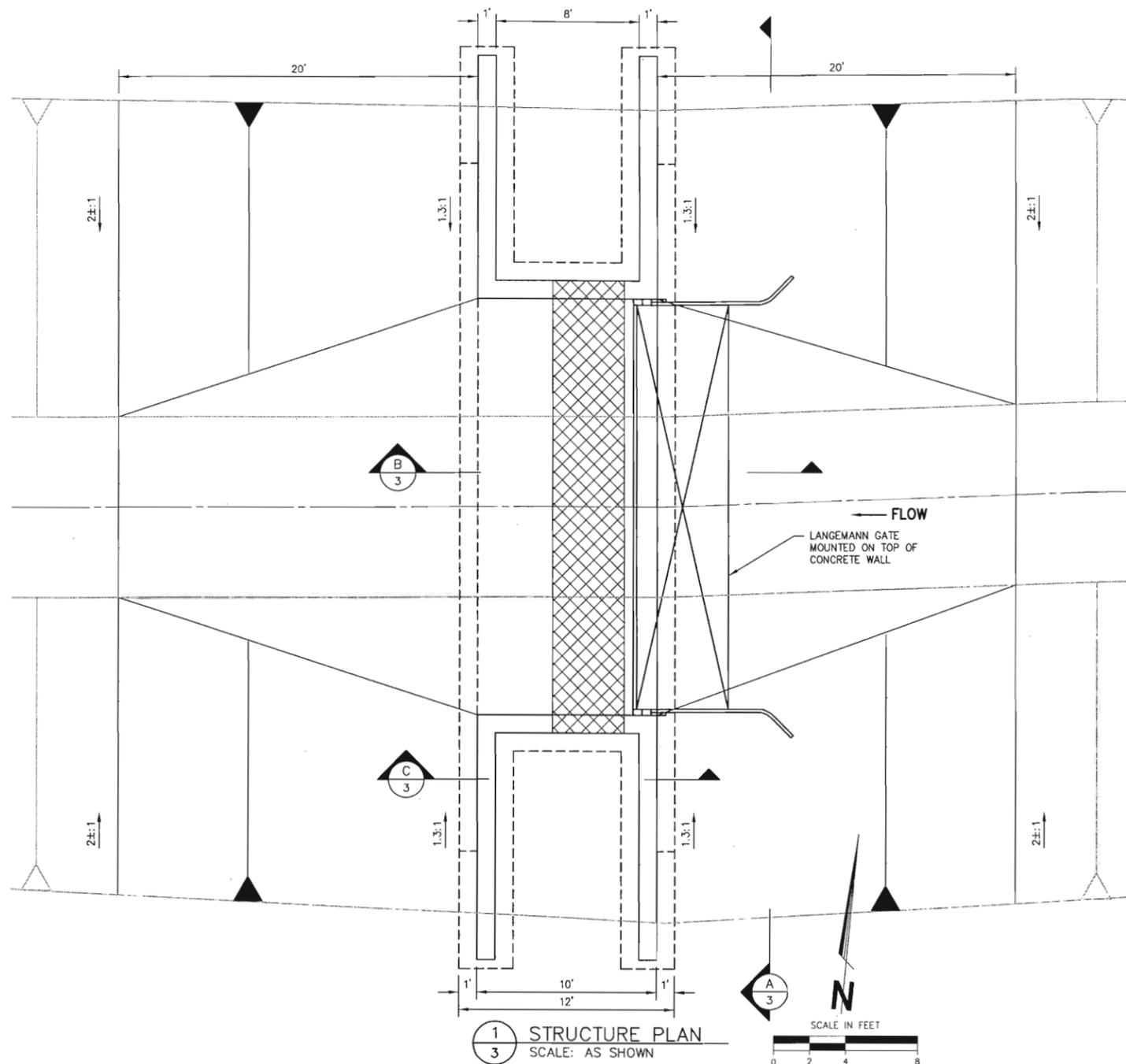
AERIAL PHOTO

2012 OAKES BASIN IMPROVEMENTS ENVIRONMENTAL DOCUMENTATION

KAWEAH DELTA WATER CONSERVATION DISTRICT CITY OF VISALIA

KELLER/WEGLEY

APPENDIX H



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PACKWOOD CREEK IMPROVEMENTS
CHECK STRUCTURE (LOVERS LANE)
KAWEAH DELTA WATER CONSERVATION DISTRICT
TULARE COUNTY

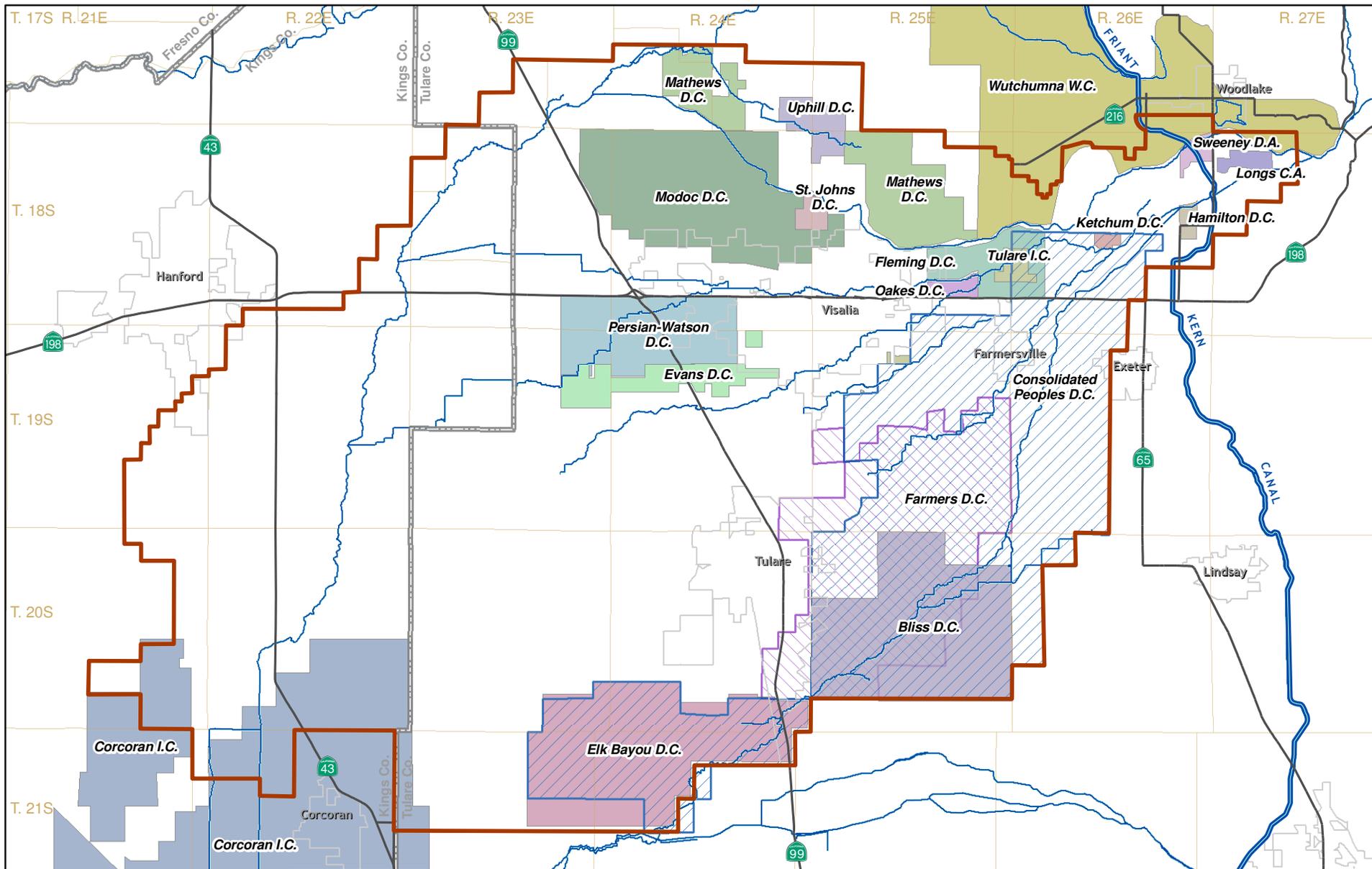
CHECK STRUCTURE

EST. 1968
PROVEST & PRITCHARD
CONSULTING GROUP
An Employee Owned Company
130 NORTH GARDEN STREET
VISALIA, CALIFORNIA 93291-5352
559/7638 - www.ppcg.com

DESIGN ENGINEER:
JOSEPH D. HOPKINS
LICENSE NO:
74,955
DRAFTED BY: P&P
CHECKED BY:
SCALE: AS SHOWN
DATE: 6-2-2011
JOB NO: 122510V2
DWG. NO:
SHEET

1/13/2012 11:50 AM V:\Clients\Kaweah Delta WCD - 122510V2-GR-Packwood Improvements\DWG\SHEET\122510V2-GR-LOVERS LANE EARTHEN DAM.dwg - Joe Hopkins

APPENDIX I



0 1 2 3 4 5 Miles

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CONSULTING GROUP
An Employee Owned Company

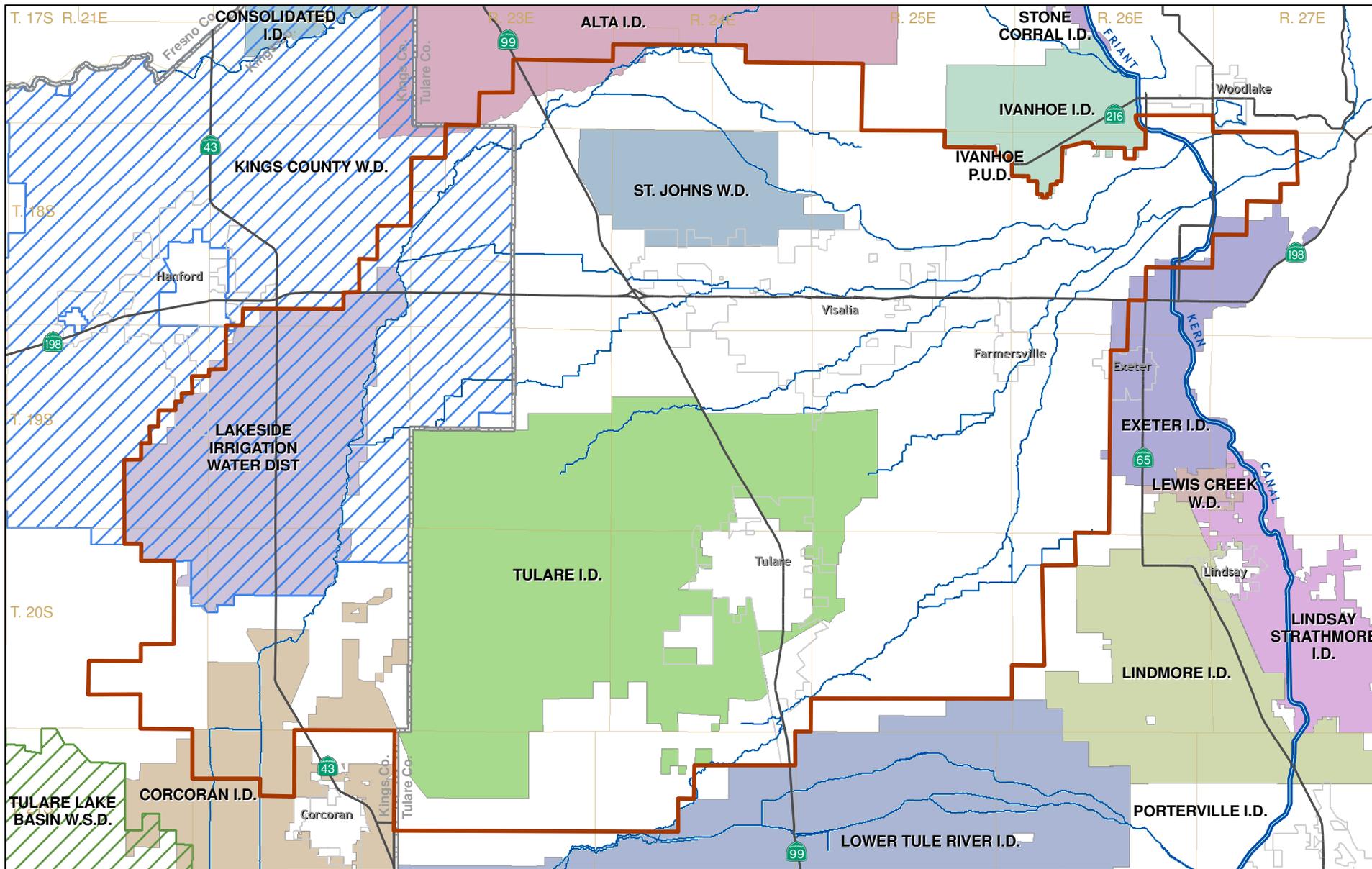
130 N. Garden Street
Visalia, CA 93291
(559) 636.1166

Legend

- District Boundary
- County Boundary
- Friant Kern Canal
- Farmers D.C.
- Urban Areas
- Major Waterways
- Township / Range
- Highway

Kaweah Delta Water Conservation District

Neighboring Ditch and Irrigation Companies



0 1 2 3 4 5 Miles

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130 N. Garden Street
Visalia, CA . 93291
(559) 636.1166

Legend

- District Boundary (thick orange line)
- County Boundary (dashed grey line)
- Urban Areas (grey outline)
- Township / Range (yellow outline)
- Friant Kern Canal (blue diagonal lines)
- Major Waterways (blue wavy line)
- Highway (black line with shield)

Kaweah Delta Water Conservation District

Neighboring Surface Water Delivery Districts

APPENDIX J

MEMORANDUM

To: Larry Dotson, PE
From: Richard Moss, PE, Randy Hopkins, PE
Subject: Packwood and Cameron Creeks Pool and Basin Reconnaissance Study
Date: August 10, 2010

BACKGROUND

The Kaweah Delta Water Conservation District (KDWCD) is working with the City of Visalia, CalWater and Tulare Irrigation District to develop a groundwater recharge program in the Visalia region. As part of this effort the agencies are considering using Packwood and Cameron creeks to convey water from the Kaweah or St. Johns rivers (originating from either the Kaweah River or CVP Friant-Kern Canal) to one or more basins for groundwater recharge. In-channel check structures could also be used to store water in the creeks to increase recharge.

A hydraulics and capacity analysis was previously performed on both Packwood and Cameron creeks along their alignments near and through the City of Visalia. A HEC-RAS model was developed for each creek to determine anticipated water surface elevations at various flow rates. In conjunction with the HEC-RAS models, profiles of each creek were developed to show potential capacity and freeboard issues at various flow rates.

PURPOSE AND SCOPE

KDWCD and the City of Visalia are considering the use of these two creeks for groundwater recharge and/or conveying surface water to recharge basins located along the creek alignments. By using existing check structures or constructing new ones at strategic locations along the creeks, pools could be developed to temporarily store water and to allow it to percolate into the aquifer or to allow the water to be diverted into adjacent basins for recharge.

A pool capacity analysis was performed for several pool alternatives along each creek alignment. Potential pool locations were identified that maximize the pool depth and length of pool upstream of the check structure. For each pool alternative, a conceptual opinion of probable construction cost was developed to weigh the cost and benefit of each pool alternative. The data used for the analysis was based on work developed from the previous hydraulic capacity analysis. In addition, existing and new basins were considered for recharge outside of the creek channels, and estimates of recharge capacity were determined.

ATTACHMENT 3 – WORK PLAN

APPENDIX D

Packwood Creek Recharge Project Basis of Design

Visalia Water Management Committee

Basis of Design Report

for

Packwood Creek Control Structures

Job No. 122512V2

November 19, 2012

Prepared By:

Accepted By:



Kaweah Delta Water Conservation District

Date

City of Visalia

Date

Tulare Irrigation District

Date

VWMC Basis of Design Report

Packwood Creek Control Structures

1. Introduction

Kaweah Delta Water Conservation District (KDWCD) has been awarded an USBR Fiscal Year 2012 Water and Energy Efficiency Grant to construct 4 new check structures, and modify 1 existing check structure, within Packwood Creek. This project was conceived through a cooperative program for surface water and groundwater management between the City of Visalia (City) and KDWCD, known as the Visalia Water Management Committee (VWMC), and it will be the VWMC that contributes the matching funds for the grant. While not a member of the VWMC, Tulare Irrigation District (TID) is often involved to provide input as their facilities and resources are usually involved. The concept was further refined in a study entitled "Packwood and Cameron Creeks Pool and Basin Reconnaissance Study" completed by Provost and Pritchard Consulting Group dated August 10, 2010. This study identified strategic locations that would allow for the pooling and recharging of water.

The purpose of this Basis of Design report is to document our current understanding of the project, and outline the criteria we will use in our design. Currently, the structures are envisioned to be equipped with automated gates capable of maintaining high water levels in the channel. The creek will essentially be used as a linear recharge basin to improve the groundwater levels for the City. Additionally, the gates must be able to open completely to allow free flow during flood events.

2. Operational/ Site Conditions

- A. There are 3 flow regimes the structures must be designed for:
 - i. Maintaining a high water level at the structure to maximize recharge rates
 - ii. Controlling an irrigation flow of 150 CFS desired by TID
 - iii. Passing 350 CFS flood flows without significantly impacting upstream water levels
- B. Existing flow rate into Packwood Creek is controlled though a headgate off of the Kaweah River.
- C. The miscellaneous earthwork mentioned in the grant application was intended for site improvements, and not for the raising of banks to final grade upstream. If bank raising is required, a cost will be sought from the selected contractor, but the work will be conducted under a separate scope and contract.
- D. Incorporate consistency between structures, as possible.
- E. 15-foot wide drive banks are desired
- F. Consideration will need to be given to backhoe access should board guides be used in conjunction with an automated gate. Board guides should be located to eliminate the need for a drivable deck as practicable.
- G. A quick release mechanism will be considered should board guides be used in conjunction with the automated gate.

VWMC Basis of Design Report

Packwood Creek Control Structures

- H. The project will be publicly bid and constructed by a general contractor and not by KDWCD, TID, or City staff.
- I. Site location will need to consider structure proximity to mature trees. Trees have the potential to impact construction, inhibit sunlight for solar power, and conflict with the City's Valley Oak protection ordinance.
- J. A portion of the City's storm drain system discharges directly into Packwood Creek. The City staff is concerned with the portions that discharge between Lovers Lane and Check #5. There is a potential that the Creek's elevated water level may cause water to backup and surface through storm drain inlets and impact the flows of nuisance waters into the Creek. There is also a concern of road subsidence from prolonged charging of the storm drain pipelines. **These concerns must be addressed before the City will sign off on the project.**

3. Right-Of-Way

Preliminary research has been performed in the form of reviewing APN maps, record maps, and deeds to affected properties. It has been identified that easements do exist on some properties, but it has not been identified who these easements have been granted to, and what rights accompany these easements. To further understand the encumbrances on the property it is suggested that a preliminary title report or Chain of Title guarantee be obtained. Of course, this will come once the proposed sites are confirmed, and at the direction of the KDWCD's counsel and the City Attorney.

4. Utilities

It is unknown at this time what utilities exist at the sites. Utility companies will be contacted, and the topographic survey will attempt to capture surface features such as poles, pedestals, utility boxes, etc.

5. Engineering Criteria

- A. **Design Flow** – TID has required that the structures will need to be designed to control at least 150 CFS. The structures must also be designed to pass the flood flow obligation of 350 CFS. The 350 CFS does not need to be regulated by the automated gate.

VWMC Basis of Design Report

Packwood Creek Control Structures

- B. **Gate selection** – KDWCD has already expressed an interest in using an Aqua Systems 2000 (AS2I) Langemann gate. The Langemann gate can measure flow rate in non submerged conditions, and has built-in automated control capability to control either flow or level. Another option is an AS2I Lopac gate. This gate maintains upstream water level, but cannot measure flow. The Lopac gate would only be considered for Checks #2, 3 and 4, where flow measurement is not necessary. See the attached brochures (**Attachment 6**). AS2I will be consulted to determine the appropriate size of gate to use. If a Langemann gate does not work within the available limits of Check #5, other options will be considered that may allow for automated flow control without major structure modifications.
- C. **Water levels** – The desire of the VWMC is to maintain a high water level in Packwood Creek to maximize recharge potential. However, the structures will be designed with enough open area as to not significantly increase the existing water level during flood flow events.
- D. **Geometry** – Maintain similar to existing, except for immediately downstream and upstream where earthwork may be necessary to transition from channel to structure geometry. This transitioning may require some slope stabilization.
- E. **Soils** – A geotechnical investigation will be performed for this project to evaluate soil types, bearing capacity, and creep ratios for piping potential.
- F. **Sedimentation** – Sedimentation and debris have accumulated upstream of the existing Check #5. Since sediment build up is probable at the proposed sites, this will become a criterion for evaluation when selecting gate type. If Langemann gates are used, it may require that slide gates are also installed to allow the sediment to pass.
- G. **Flow Measurement** – Flow measurement is currently not available, except at the head of Packwood Creek. Flow measurement will be necessary at Checks #1 and 5 to quantify the amount of water recharged between the two structures. It is not necessary to have flow measurement at the intermediate Checks #2, 3, and 4. Flow measurement can be incorporated as part of the Langemann gate. Flow measurement capability of the gate is limited in a submerged condition. This will be considered when determining gate length. Since flow measurement is not needed at Checks #2, 3, and 4, Lopac gates will be investigated at these sites.
- H. **Controls/Communication** – It is understood that KDWCD, City of Visalia, and TID all have existing SCADA networks. It is planned that the sites will be remotely monitored by all entities, however only KDWCD and TID will have the ability to remotely control. Input will be needed from all three entities when this step in the design is reached.

VWMC Basis of Design Report

Packwood Creek Control Structures

- I. **Operation** – Default mode for gate operation will be upstream level control. During flood flows the gate will be completely lowered to allow the flood flows to pass mostly unobstructed. The possibility and ease of switching to flow control will be investigated with the gate manufacturer as TID has expressed an interest to operate in flow control under certain circumstances.
- J. **Electricity** – Langemann gates and associated SCADA systems are normally solar powered and electrical service is not required, but the gate and SCADA can be hardwired if desired. At this time it is unclear whether or not electrical power is readily available in the vicinity of the proposed gates. It will be assumed that the solar power option will be used, however, conduits will be placed should it be desired to hardwire in the future. It should also be noted that obtaining electrical service would likely take a considerable amount of time. Also, KDWCD has measures against solar panel theft that will be employed if deemed necessary.
- K. **Demolition** – At this time, existing Check #5 is assumed stable and will continue to be used. If as-built information is available, it will be reviewed to assure its original structural design can withstand any proposed modification. There are no known facilities near the remaining four sites, so the only demolition will be the clearing and grubbing of vegetation, and the removal of unsuitable earthen material.
- L. **Construction Access** –The limits of construction activities will need to be determined, as well as local staging areas and any temporary construction easements.
- M. **Safety** – Site fencing will be modeled after recent improvements by the City at Mill Creek near McAuliff Avenue.
- N. **SWPPP and DCP** – Given the distance between sites, it is believed that a waiver for a Storm Water Pollution Prevention Plan (SWPPP) and Dust Control Plan (DCP) can be acquired for this project. Factors contributing to the waiver are 1) if the agencies can accept these as discrete projects and 2) whether or not the project is constructed during a wet period.
- O. **Permits** – In addition to the permits mentioned above, USACE 404, RWQCB 401, and a DFG 1602 permits are required. Gibson and Skordal will move forward with the 404 and 401, including wetland delineation, once project locations are firm. P&P will pursue the 1602 permit.

VWMC Basis of Design Report

Packwood Creek Control Structures

6. Site Selection

All of the proposed sites of the original study are identified as Checks #1-5 in **Figure 1** below. These sites have been reviewed based on preliminary data (map research, aerial imagery, coarsely interpolated cross sections, etc), as well as a site visit by KDWCD, the City, TID, and P&P on September 7, 2012. Following the site visit, P&P was asked to evaluate the locations of Checks #1, 3 and 4. The currently proposed locations are identified on the map as, Checks #1A, 2, 3A, 4B, and 5. The following discussion clarifies the final structure location, how it was arrived upon, and design specifics of that site.

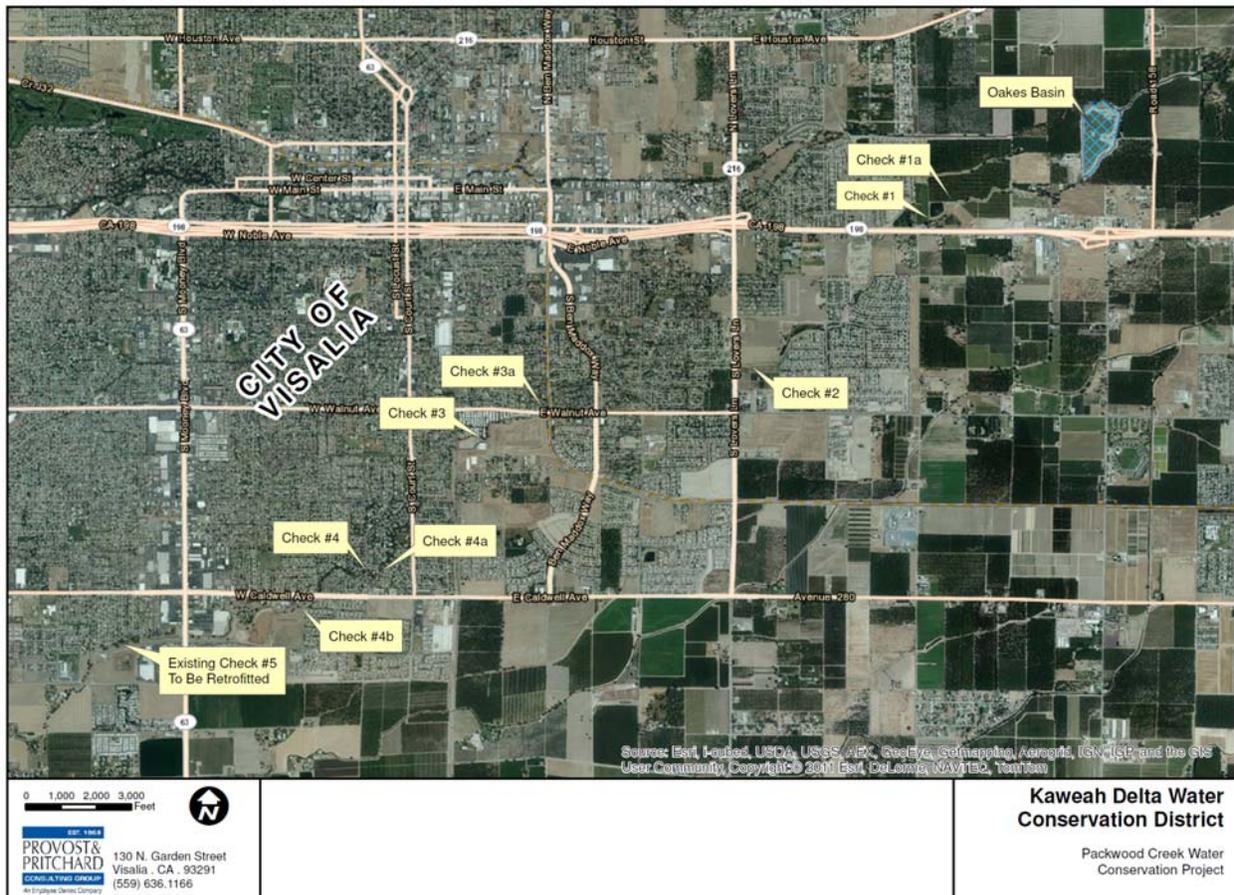


Figure 1. Check Structure Locations (All Considered)

VWMC Basis of Design Report

Packwood Creek Control Structures

- A. **Check #1** – The original location of Check #1 was just upstream of where the Oakes Ditch Pipeline discharges into Packwood Creek. It has since been understood that this location is within a the future Highway 198 and Road 148 interchange project by both Caltrans and the City.

The structure has been relocated approximately 900 feet upstream of the original location, and is identified as Check #1A on **Figure 1**. This places it roughly 50 feet upstream of the future road project. This site still has the potential to deliver water to future basins, and will be in a section of creek that is fully owned by the City. **Attachment 1** provides detail on both the Check #1 and Check #1A sites.

Table 1. Check #1a Characteristics

Pool Elevation	349
Pool Volume	12.4 AF
Pool Length	6,000 LF
Water Depth at Structure	8 Ft

- B. **Check #2** – The location of this check has remained unchanged from the original study (see **Attachment 2** for map). It is located wholly within one privately owned parcel. Thus an easement would have to be obtained from only one landowner. It was considered to move it downstream of Lovers Lane to a portion owned by the City. However, the grade change was too great. This check structure will also function to provide the head necessary to deliver the water through the turnout at Kiwanis Park Basin (formerly known as Dooley Basin).

Table 2. Check #2 Characteristics

Pool Elevation	340
Pool Volume	15.2 AF
Pool Length	6,800 LF
Water Depth at Structure	8 Ft

- C. **Check #3** – The original location of Check #3 was just upstream of Santa Fe Avenue. The northern bank of Packwood Creek at this location is considerably lower than the southern bank (approximately 3.5'). This location would require major earthwork in a confined area to bring to final grade. There are also many mature trees on the north bank that may impact construction. In addition, this site straddled two parcels with different owners.

The proposed location is just upstream of Walnut Avenue, roughly 2,350 feet upstream of its original location, and is identified as Check #3A on **Figure 1**. Minimal earthwork would be required to the banks, and the proposed location has better access and visibility. Additionally, the entire width of Packwood Creek in the proposed location appears to be owned by the County of Tulare. Although the south side of Walnut had advantages for constructability, it was

VWMC Basis of Design Report

Packwood Creek Control Structures

decided that having a culvert directly upstream was undesirable, as was the potential risk of flooding Walnut Avenue. **Attachment 3** provides detail on both the Check #3 and Check #3A sites.

Table 3. Check #3A Characteristics

Pool Elevation	332
Pool Volume	10.4 AF
Pool Length	7,000 LF
Water Depth at Structure	8 Ft

- D. **Check #4** – The original location of Check #4 was just upstream of West Avenue, in a heavily populated area. In this section there are also many mature trees that have the potential to cause construction issues as well as block out direct sunlight for solar powered operation. It was then relocated to roughly 300 feet upstream, in a section clear of vegetation, and at a more consistent cross section. However, a site visit deemed this a poor location, and a consensus was made to investigate the temporary rubble dam location downstream of Caldwell Avenue.

The proposed location (identified as Check #4B on **Figure 1**) is now roughly 2,600 ft downstream of the original location identified in the hydraulic study, and is near the temporary rubble dam location. In the proposed location, the land appears to be wholly owned by the City of Visalia. Moving the structure downstream will impact the backwater potential of Check #5. **Attachment 4** provides detail on the Check #4, Check #4A, and Check #4B sites.

Table 4. Check #4B Characteristics

Pool Elevation	318
Pool Volume	9.2 AF
Pool Length	6,100 LF
Water Depth at Structure	8 Ft

- E. **Check #5** – This is an existing structure located just upstream of County Center Drive (see **Attachment 5**). There are two bays with weir board guides at this location that reach the bottom of the structure, each 5.5' wide (overall width with center pier is 12'). Higher weirs exist on either side, for higher flows. It is assumed that the existing concrete is structurally sound; however, as-built drawings will be sought. The exposed aggregates will be sealed with a grout or epoxy. At this location it is likely that an automated gate will be placed in each of the two bays (see the Langemann Gate of **Attachment 6**).

VWMC Basis of Design Report

Packwood Creek Control Structures

Table 5. Check #5 Characteristics

Pool Elevation	313
Pool Volume	18.1 AF
Pool Length	6,050 LF
Water Depth at Structure	8.5 Ft

Channel Profiles with Finalized Locations – With the check structures at the final locations as described above, a hydraulic profile was created (See **Attachment 7**). As seen in **Attachment 7**, at 0 CFS, there is a discontinuity in the pool between Check #3 and Check #4. This is due to Check #3 being relocated upstream, and Check #4 being relocated downstream. However, when the channel is modeled with the proposed check structure at 150 CFS, continuity is created between pools, and the check structures are effectively pooling water above the normal water level. In the future, a check structure between Check #3 and Check #4 would create continuity between all pools at 0 CFS. The importance of continuity between pools is to utilize as much of the creek as possible during pooled recharge to maximize infiltration.

It appears there is overtopping of the channel banks at Check #2 and Check #5. This will be confirmed when the detailed topographic survey is performed, and will be addressed by either lowering the target water level or raising the channel banks.

VWMC Basis of Design Report Packwood Creek Control Structures

ATTACHMENTS

- 1 – Check #1 Exhibits
- 2 – Check #2 Exhibits
- 3 – Check #3 Exhibits
- 4 – Check #4 Exhibits
- 5 – Check #5 Exhibits
- 6 – Aqua Systems 2000, Inc. Brochures (Langemann and Lopac Gate)
- 7 – Channel Hydraulic Profiles

REFERENCES

Provost and Pritchard Consulting Group, Packwood and Cameron Creeks Pool and Basin Reconnaissance Study, August 10, 2010

Provost and Pritchard Consulting Group, Draft Basis of Design Report for Packwood Creek Control Structures, August 9, 2012

Attachment 1
Check #1 Exhibits



0 100 200 Feet

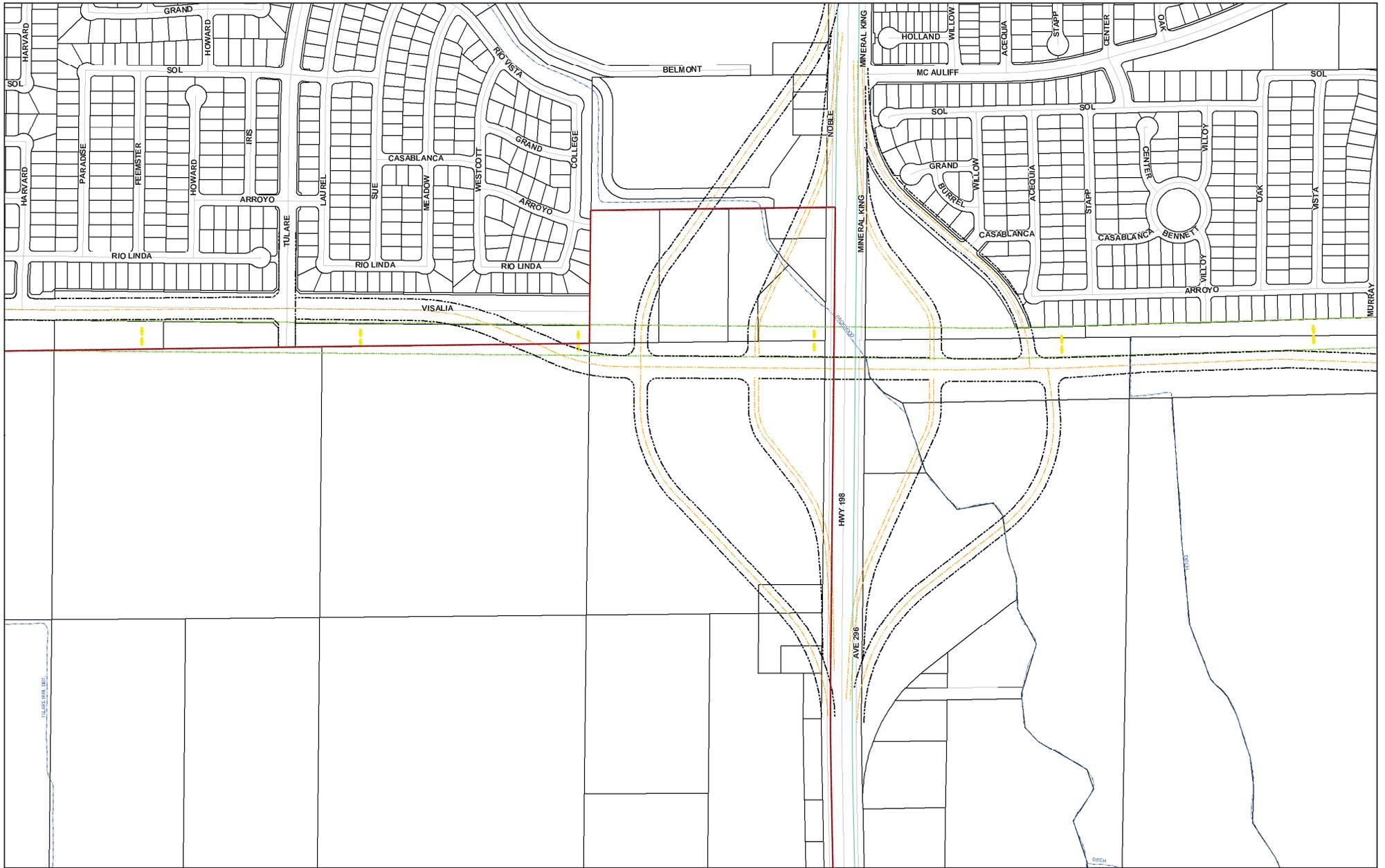
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130 N. Garden Street
 Visalia, CA 93291
 (559) 636.1166

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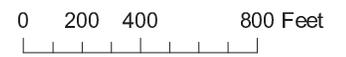
Kaweah Delta Water Conservation District

Check 1 and 1a



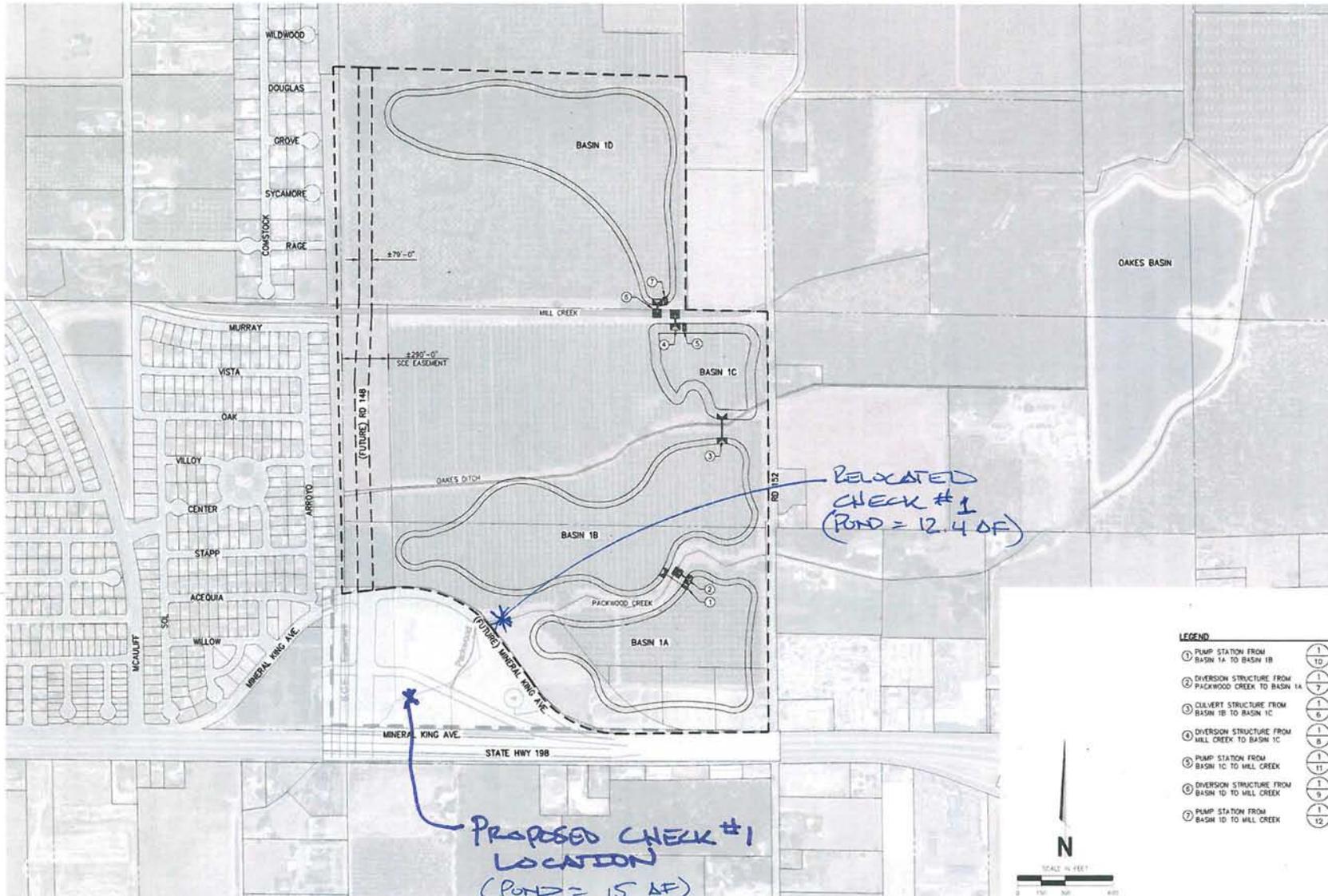
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	CITY LIMITS		STREETS		PARCELS
	STATE RIGHT OF WAY		WATERWAYS		PROPOSED TOWER
	RD 148 PROPOSED CENTERLINE		SCE EXISTING 150' RIGHT OF WAY		
	RD 148 PROPOSED RIGHT OF WAY		SCE TOWER CENTERLINE		

SCE TOWER LOCATIONS AND PROPOSED ROAD 148 ALIGNMENT





Know what's below.
Call before you dig.



OVERALL LAYOUT PRELIMINARY BASINS v03

811
Know what's below.
Call before you dig.

PRELIMINARY
NOT FOR CONSTRUCTION
10/17/11

DWR FLOOD GRANT
CITY OF VISALIA
VISALIA, CA
PRELIMINARY BASIN PLAN - v03

PRITCHARD & ASSOCIATES
CONSULTING ENGINEERS
1100 SOUTH GARDNER STREET
VISALIA, CA 93291-1100
PHONE: 559.238.1100 FAX: 559.238.1117

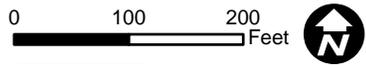
DESIGN ENGINEER:
D. MILLS
LICENSE NO. _____

DRAFTED BY: _____ CHECKED BY: _____

SCALE: AS SHOWN
DATE: 10-17-2011
JOB NO: 1998172
DWG NO: _____
SHEET: _____

1

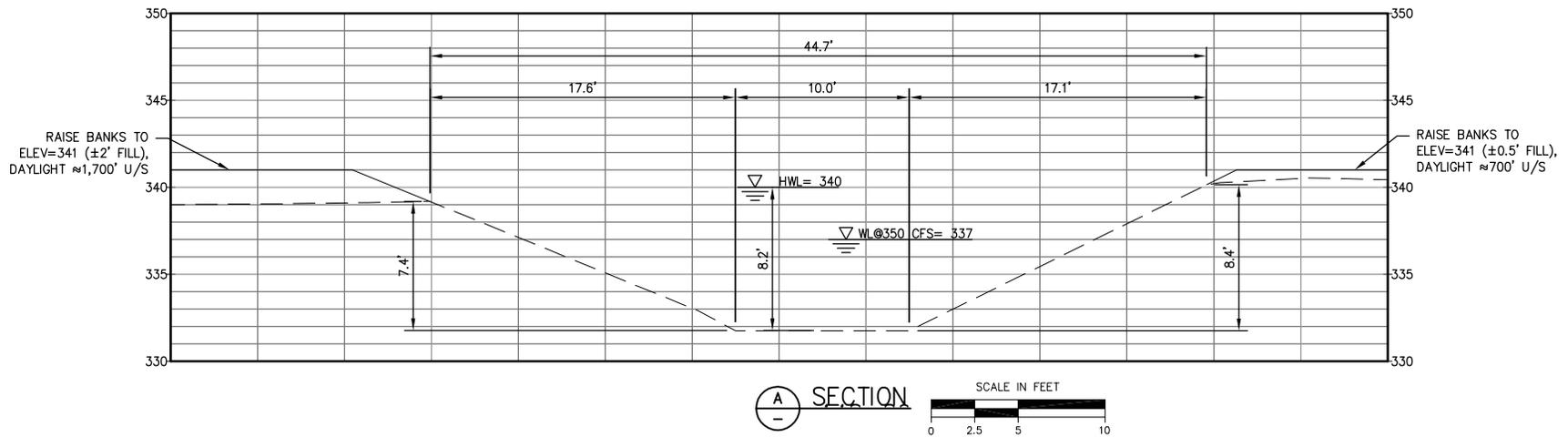
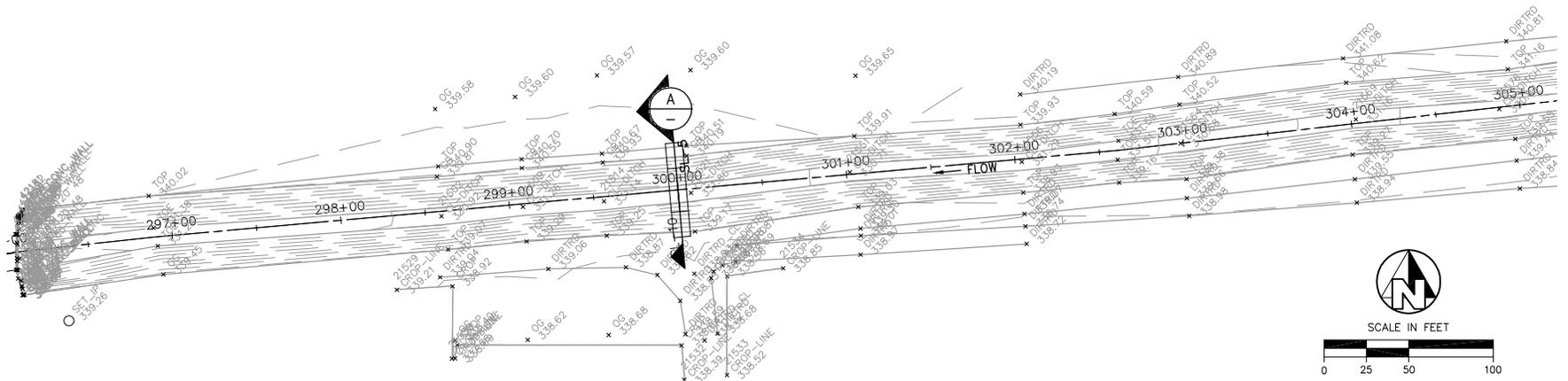
Attachment 2
Check #2 Exhibits



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 CONSULTING GROUP
 An Employee Owned Company
 130 N. Garden Street
 Visalia, CA . 93291
 (559) 636.1166

**Kaweah Delta Water
 Conservation District**

Check 2



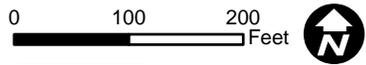
SECTION A-A

EST-1968
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PACKWOOD CREEK CHECK STRUCTURES
 KAWEAH DELTA WATER CONSERVATION DISTRICT
 TULARE COUNTY
CHECK #2 (STA 300+00)

DESIGN ENGINEER:
 J. HOPKINS
 DATE: 7/23/2012
 JOB NO: 122512V2
 SHEET **1** OF **1**

Attachment 3
Check #3 Exhibits



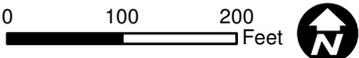
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Kaweah Delta Water Conservation District

Check 3



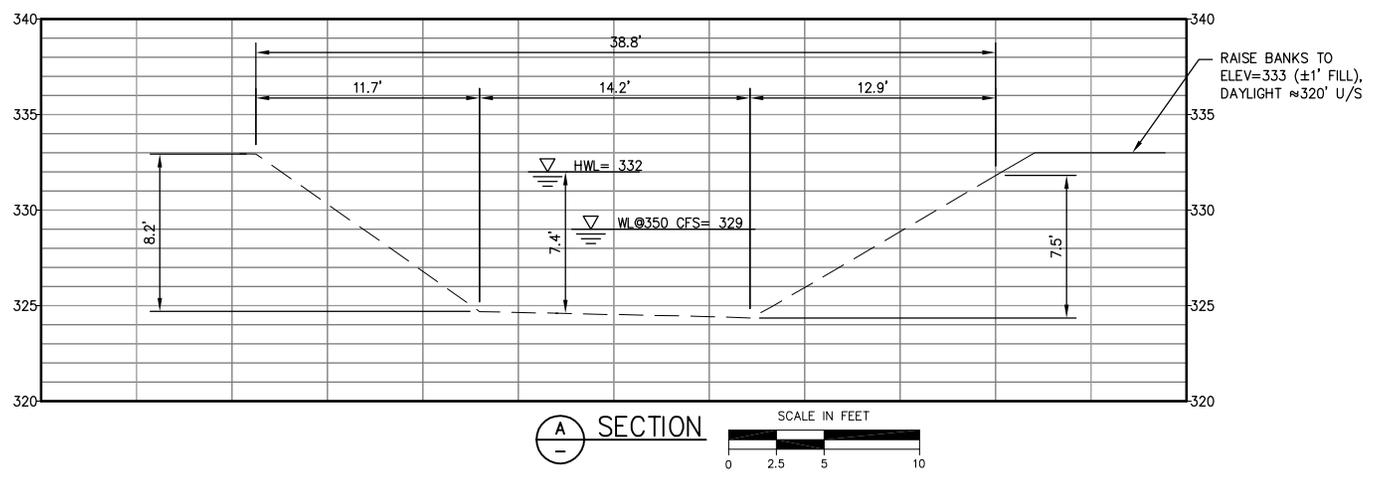
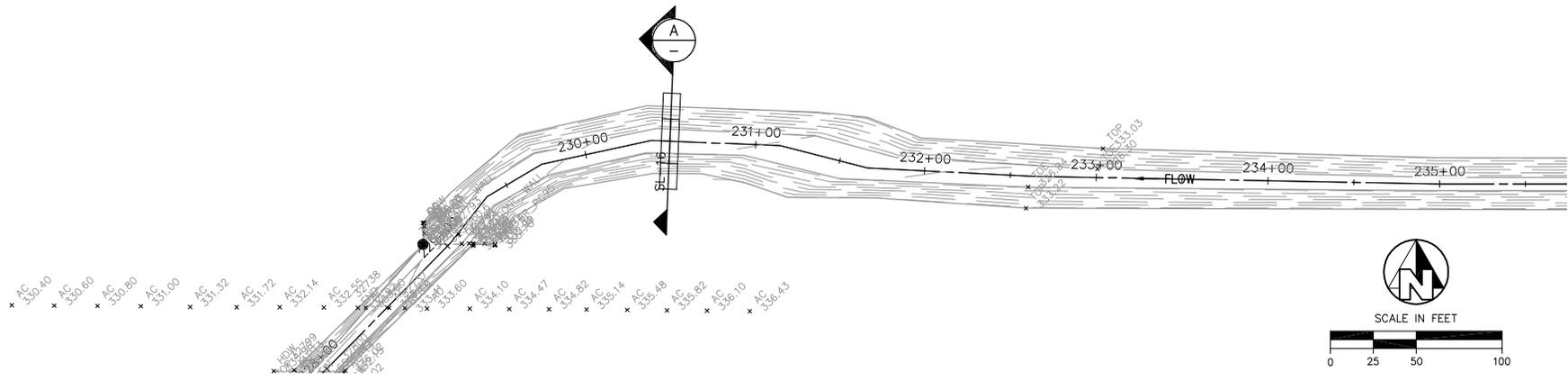
Check #3a



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Kaweah Delta Water Conservation District

Check 3a



	PACKWOOD CREEK CHECK STRUCTURES		DESIGN ENGINEER: J. HOPKINS
	KAWEAH DELTA WATER CONSERVATION DISTRICT TULARE COUNTY		DATE: 7/23/2012
	CHECK #3A (STA 230+50)		JOB NO: 122512V2
			SHEET 1 OF 1

Attachment 4
Check #4 Exhibits

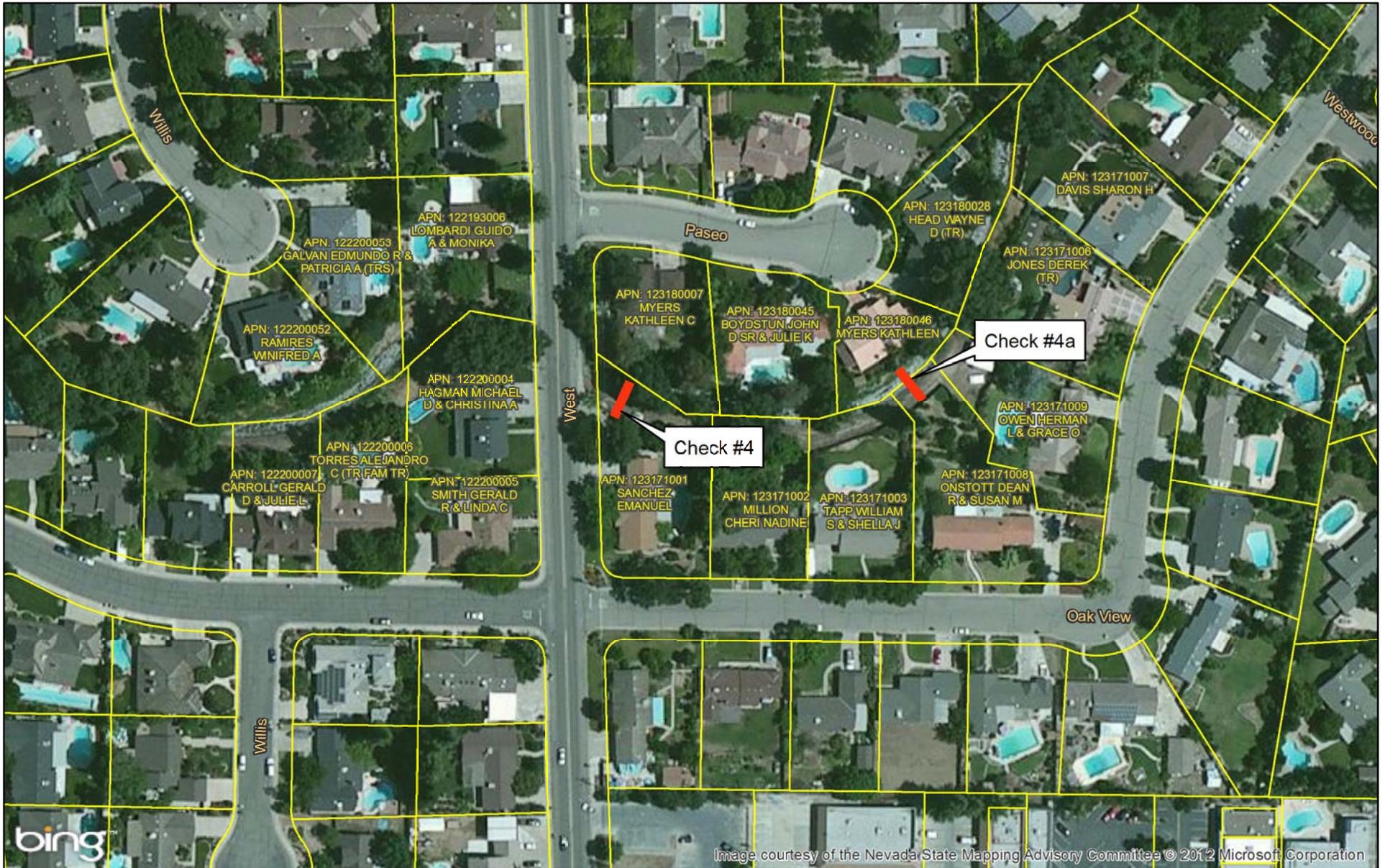
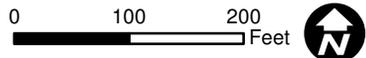


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Check 4 and 4a



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0 100 200 Feet

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Check 4b

Attachment 5
Check #5 Exhibits



Check #5

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0 100 200 Feet

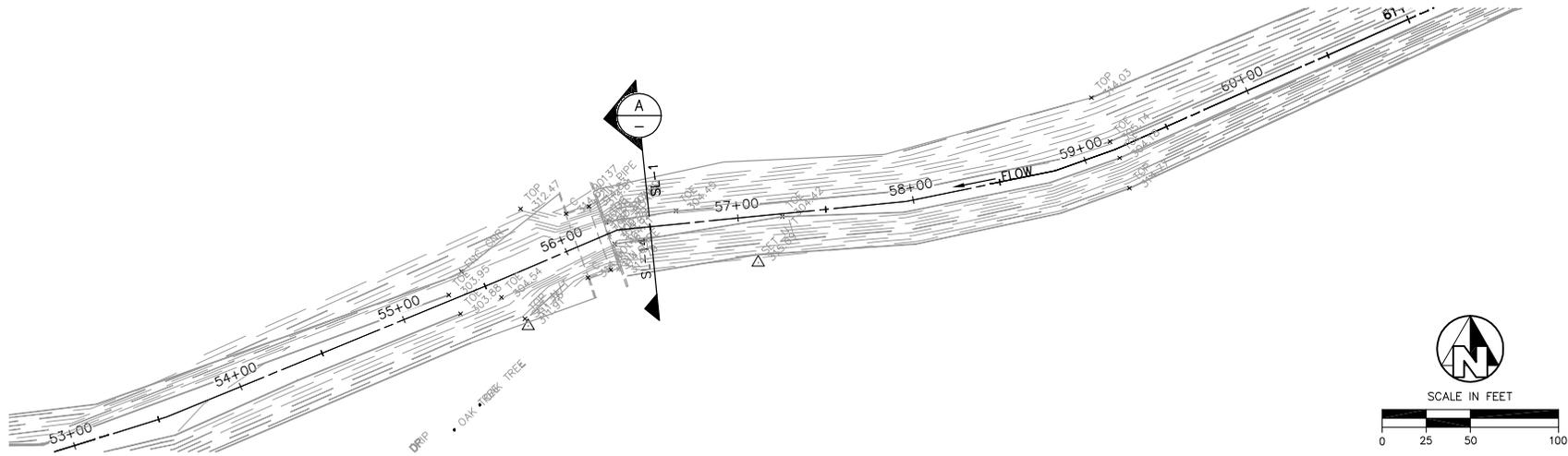


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Check 5



Attachment 6
Langemann Gate Brochure

Product Information Sheet

Langemann® Gate

Invented by Peter Langemann, the Langemann Gate was developed through a cooperative effort between *St. Mary River Irrigation District*, Peter Langemann and **Aqua Systems 2000 Inc. (AS2I)**. The Langemann gate, used in conjunction with one of **AS2I's** controllers, provides solutions to a host of water control problems.

The patented design has gained recognition due to its simplicity, overshot technology, and low power requirements.



Advantages:

- **Superior trash management.**
- **Low power requirements:** The unique distribution of water pressure afforded by the gate configuration and the low friction operating components provide for remarkably low power requirements.
- **Precise positioning:** The Langemann Gate provides positive linear movement in either direction. Convenient staff gauge placement and the linear relationship of the gate and water level provides reliable operating information.
- **Ease of installation:** All but the very large gates are fully assembled for shipping. A small crew and a suitably sized crane can install a gate in a couple of hours.

Application Suitability:

A Langemann Gate with controller can either:

- Maintain a constant upstream water level (such as in a check structure) or
- Provide a pre-determined constant flow to downstream users (such as a turnout)

Applications:

- Irrigation check structures.
- Turnout structures.
- Spillway structures.
- Diversions structures.
- Water and sewage treatment plants.
- Flood control structures.

Features:

- 3CR12 stainless steel.
- Stainless steel gate pin.
- Tuffcast rollers.
- Nylon idlers and hinge pin.
- Waterproof roller chain in and omega configuration.
- Efficient helical worm speed reducer.
- NEMA 4/12 electrical panel.
- Overload relay.
- Limit switch.
- Motor starter.
- 12 or 24 Vdc operation for reliability.
- Inconspicuous solar panel.

Options:

- 304 stainless steel components where aggressive water is encountered
- Operation modes:
 - - Manual (hand-crank)
 - - Manual Electric
 - - Automated (upstream level or flow control)
- Integrated stilling well.

LANGEMANN GATE DETAILS



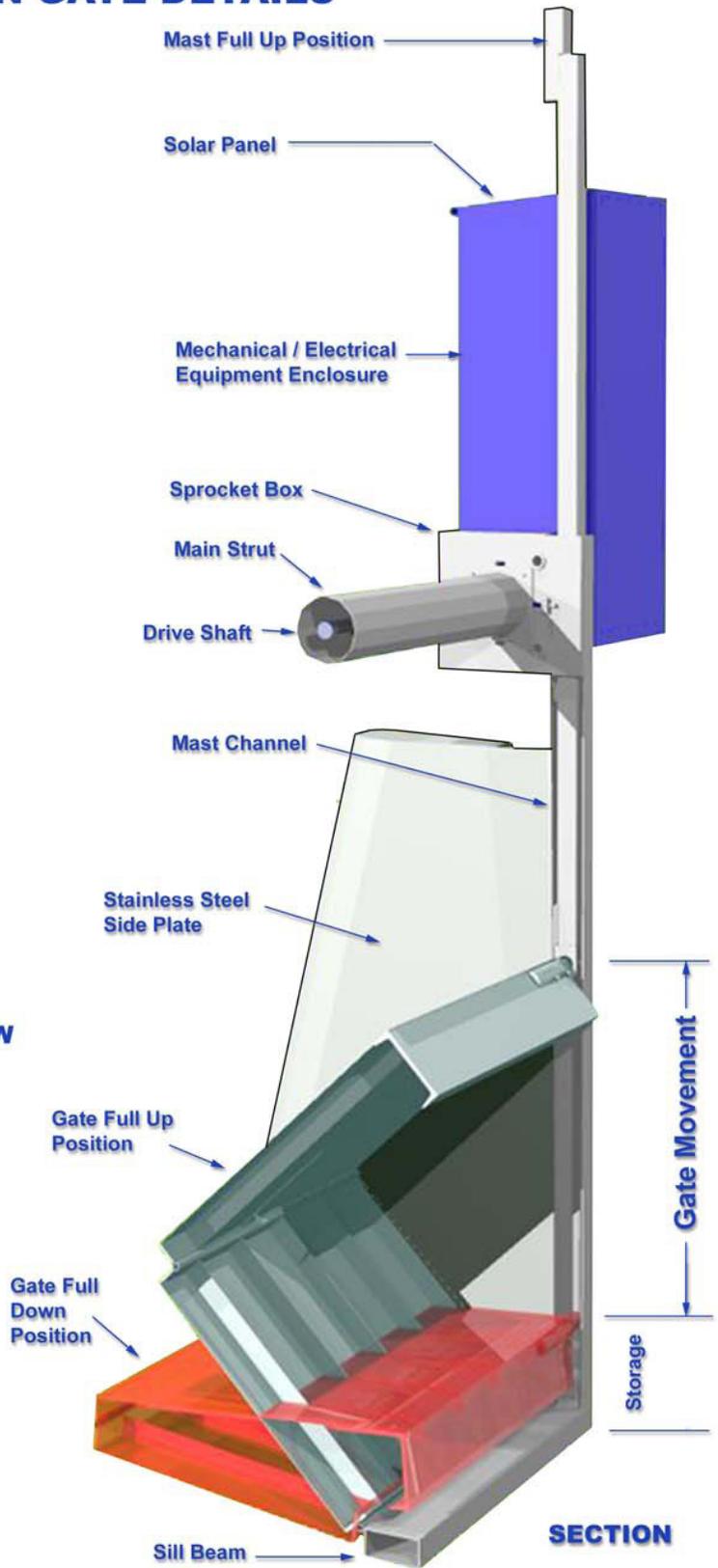
CLOSED GATE - UPSTREAM VIEW



CLOSED GATE - DOWN STREAM VIEW



OPEN GATE - UPSTREAM VIEW



Product Information Sheet

Hydra - LOPAC® Gate

US Patent # 7,114,878 Canadian Patent pending

The LOPAC gate was developed by Peter Langemann in the 1980's to assist tail end irrigators in managing widely fluctuating water supplies. A number of installations have operated successfully for the past couple of decades. *Aqua Systems 2000 Inc. (AS2I)* has combined the simplicity of the LOPAC with a hydraulic actuator to provide a flexible and economical solution to water control problems in small to medium sized canals.

Applications:

- Irrigation check structures.
- Spillway structures.
- Diversions structures.
- Fish screening structures.

Advantages:

- Superior trash management.
- Low power requirements.
- Reliable and accurate control.
- Ease of Installation: LOPAC gates are fully assembled for shipping and are typically dropped into existing stop-log guides.



Features:

- 3CR12 stainless steel.
- Hydraulic actuation.
- Environment friendly oil.
- Manual electric operation.
- NEMA 3 electrical panel.
- Motor starter, overload relay, limit switch.
- Independent high-level emergency assist.
- 12 Vdc battery operation for reliability.
- Solar powered.

Options:

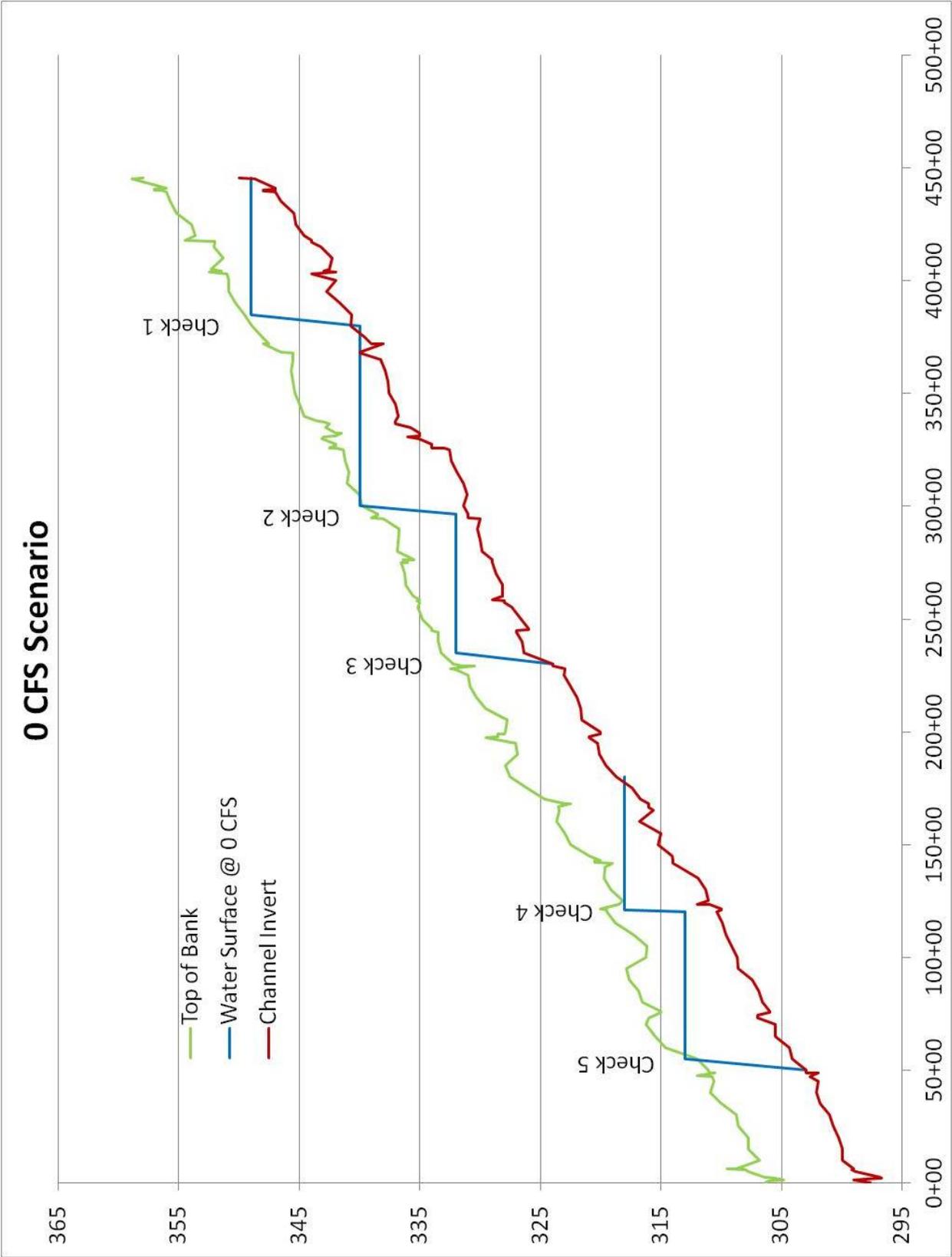
- 304 stainless steel components where aggressive water is encountered.
- Operation modes:
 - Hydraulic:
 - Automated:
 - Screw jack
 - Manual (hand crank).
 - Manual electric.
 - Automated.

www.as2i.net

Aqua Systems 2000 Inc.

1-800-315-8947

Attachment 7
Channel Hydraulic Profiles



150 CFS Scenario

